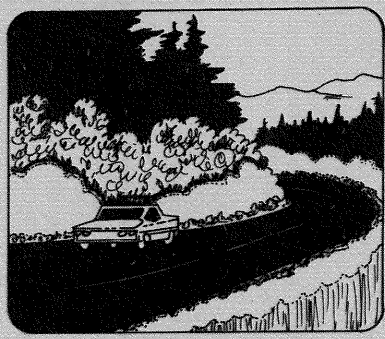
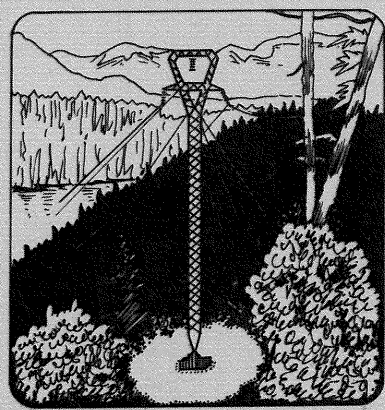


1238

#1238

Herbicide Use

on national forests in alaska



draft addendum
environmental statement

usda forest service
alaska region

22 22 27 129

U.S.D.A. FOREST SERVICE ENVIRONMENTAL STATEMENT ADDENDUM

Herbicide Use on National Forests of Alaska
Calendar Year 1977

AN ADDENDUM TO

U.S.D.A. FOREST SERVICE ENVIRONMENTAL STATEMENT

Herbicide Use on National Forests of Alaska
Calendar Year 1975

Prepared in accordance with
Section 102(2)(c) of Public Law 91-190

Type of Statement:

Draft Addendum

Submitted to CEQ:

FEB 14 1977

Type of Action:

Administrative

Responsible Official:

John A. Sandor
Regional Forester
Alaska Region
Juneau, Alaska

U.S.D.A. FOREST SERVICE ENVIRONMENTAL STATEMENT ADDENDUM

Herbicide Use on National Forests of Alaska
Calendar Year 1977

Prepared in accordance with
Section 102(2)(c) of Public Law 91-190

Summary Sheet

- I. Draft Addendum
- II. U.S.D.A. Forest Service
- III. Administrative
- IV. The action proposed by this environmental statement involves vegetation control with the use of herbicides on road, railroad, and powerline rights-of-way. The herbicides proposed for use include 2,4-D, picloram, amitrole, sodium metaborate, sodium chlorate, and bromacil. Herbicides will be applied by, depending upon the program, personnel of the U.S. Forest Service, Alaska Railroad, Alaska Power Administration or Alaska State Department of Highways.

Herbicide use considered in this statement is on the Tongass and Chugach National Forests. Alaska boroughs affected by the proposed action are Kenai Peninsula Borough, Greater Juneau Borough, and Greater Anchorage Borough.

All herbicides are to be used in accordance with Environmental Protection Agency regulations and registrations.

- V. A brief summary of environmental effects is outlined below:
 - 1. Susceptible target and non-target vegetation in the treatment areas will be reduced in vigor and, in most cases, killed. Plants which are less susceptible to herbicide damage will usually increase in vigor and attain a growth advantage over susceptible species.
 - 2. No wildlife population is to be adversely affected as a result of herbicide use. No endangered or threatened wildlife species occur in treatment areas.
 - 3. Available toxicity data indicate that the herbicides, when applied in accordance with recommendations of this statement, will have no significant adverse effects on soil microbial populations or aquatic organisms.

4. No adverse physical or physiological effects on humans are foreseen if all herbicide use precautions are followed.
 5. Other impacts dependent upon human philosophies, convictions, or values may occur. Those who dislike any use of chemical herbicides may react adversely to the proposed programs as may those who find brown vegetation along roads and railroads an unpleasing sight.
 6. The proposed action will have no effect on National Register of Historic Places properties or on any properties eligible for inclusion in the National Register.
- VI. The alternatives considered by the U.S. Forest Service, Alaska Railroad, Alaska Power Administration and the Alaska State Department of Highways represent modifications of the proposed actions. The alternatives considered were: inaction, mechanical removal only, herbicide application only (Forest Service only), burning, and biological control.
- VII. Principal inputs to this Statement have been provided by the following:
- Alaska Department of Highways
The Alaska Railroad
Alaska Power Administration
Ketchikan Area, Tongass National Forest, Forest Service,
Alaska Region
Pesticide-Use Coordinating Committee, Forest Service, Alaska Region

This Environmental Statement Draft Addendum will be sent to the following for comment:

Federal Agencies

Department of Commerce, Washington, D.C.
National Marine Fisheries Service, Juneau
Environmental Protection Agency, Seattle
Department of Interior, Washington, D.C.
Federal Highway Administration, Portland and Juneau
The Alaska Railroad, Anchorage
Alaska Power Administration, Juneau
Advisory Council on Historic Preservation, Washington, D.C.
Federal Energy Administration, Washington, D.C., Anchorage
Department of Housing and Urban Development, Seattle

State Agency

Alaska State Clearinghouse

Local Communities

Mayor, City of Ketchikan
Mayor, City of Klawock
Mayor, City of Petersburg
Mayor, City of Whittier
Administrator, City and Borough of Juneau
Mayor, City of Craig
Mayor, City of Seward
Chairman, Kenai Borough
Chairman, Anchorage Borough

United States Congress

Honorable Ted Stevens
Honorable Mike Gravel
Congressman Don Young

State Legislators

Honorable E. J. Haugen
Honorable Oral Freeman
Honorable Terry Gardiner
Honorable Mike Miller
Honorable Robert H. Ziegler, Sr.
Honorable Bill Ray
Honorable Keith Specking
Honorable Jalmar Kerttula

Libraries and Information Centers

University of Washington Forest Resources Library, Seattle
University of Idaho Library, Moscow
Alaska State Library, Juneau
Juneau Memorial Library, Juneau
Ketchikan Public Library, Ketchikan
Sitka Public Library, Sitka
Petersburg Public Library, Petersburg
Klawock Public Library, Klawock
Whittier Public Library
Forestry Sciences Library, Juneau
Craig Public Library, Craig
Seward Public Library, Seward
Environmental Toxicology Library, Davis, California
Wrangell Public Library, Wrangell
Ester Greenwald Library, Hoonah
Douglas Public Library, Douglas
Pelican Public Library, Pelican
Skagway Public Library, Skagway
Thorne Bay Public Library, Ketchikan
Coffman Cove Public Library, Ketchikan
University of Alaska Library, Juneau
University of Alaska Arctic Environmental Information
and Data Center, Anchorage

Haines Public Library, Haines
Kake Community/School Library, Kake
Metlakatla Community School Library, Metlakatla
Tenakee Springs Public Library, Tenakee Springs

Associations, Organizations, Clubs, etc.

Alaska Lumberman's Association, Ketchikan
Alaska Sportmen's Council, Juneau
Sierra Club, Juneau, Anchorage and San Francisco
Stikine Conservation Society, Wrangell
Alaska Conservation Society, College, Kenai and Juneau
Alaska Wilderness Council, Anchorage
National Audubon Society, New York
Tongass Conservation Society, Ketchikan
Alaska Center for the Environment, Anchorage
Federation of Western Outdoor Clubs, Anchorage, Fairbanks
Fairbanks Environmental Center, Fairbanks
Natural Resources Defense Council, Inc., Palo Alto, California
Alaska Federation of Natives, Anchorage
League of Women Voters, Juneau and Ketchikan
Alaska Native Brotherhood and Alaska Native Sisterhood of:
 Juneau
 Petersburg
 Ketchikan
 Klawock
 Craig
Alaska Discovery, Juneau
Friends of the Earth, Fairbanks
Moose Pass Sportmen's Club, Moose Pass
United Fishermen of Alaska, Juneau
West Coast Development Association, Klawock
Wilderness Society, Washington, D.C.
Western Forest Industries Association, Portland, Oregon
Alaska Sports and Wildlife Club, Ketchikan
SEALASKA Corporation, Juneau
Cape Fox Corporation, Ketchikan
Klawock-Heenya Corporation, Klawock
Kavilco Corporation, Ward Cove
Gold Belt Corporation, Juneau
Shaan-seet Corporation, Kake
Various individuals

VIII. Environmental Statement Draft Addendum available to CEQ and
the public on FEB 14 1977.

TABLE OF CONTENTS

Introduction

I.	Road Rights-of-way Programs	2
A.	Description	
B.	Environmental Effects	
1.	Favorable Effects	2
2.	Adverse Effects Including Any that are Unavoidable	
C.	Alternatives to the Proposed Action	3
D.	Relationship Between Short-Term Uses of the Environment and the Maintenance of Long-Term Productivity	
E.	Irreversible or Irretrievable Commitment of Resources	
II.	Railroad Rights-of-way Program	5
A.	Description	
B.	Environmental Effects	
1.	Favorable Effects	
2.	Adverse Effects Including Any that are Unavoidable ...	6
C.	Alternatives to the Proposed Action	
D.	Relationship Between Short-Term Uses of the Environment and the Maintenance of Long-Term Productivity	
E.	Irreversible or Irretrievable Commitment of Resources	7
III.	Powerline Rights-of-way Program	8
A.	Description	
B.	Environmental Effects	
1.	Favorable Effects	
2.	Adverse Effects Including Any that are Unavoidable ...	9
C.	Alternatives to the Proposed Action	
D.	Relationship Between Short-Term Uses of the Environment and the Maintenance of Long-Term Uses of the Environment	
E.	Irreversible or Irretrievable Commitment of Resources	

Appendix A - Herbicide Use Programs

Appendix B - Herbicide Specimen Labels

Appendix C - Glossary

HERBICIDE USE ON NATIONAL FORESTS OF ALASKA

INTRODUCTION

This Environmental Statement Addendum is issued as an update of the Environmental Impact Statement (EIS) entitled Herbicide Use on National Forests of Alaska, herein called the parent document, which covered all herbicide use during Calendar Year 1975. This Addendum describes all programs which propose use of herbicides on the Tongass National Forest or the Chugach National Forest during Calendar Year 1977.

Herbicide use on National Forest land is proposed by the following agencies: U.S. Forest Service, Alaska Power Administration, The Alaska Railroad and Alaska State Department of Highways. Herbicides being considered for use are: 2,4-D isooctyl ester, bromacil, picloram potassium salt, amitrole, a mixture of the triisopropanolamine salts of 2,4-D and picloram, and a mixture of sodium metaborate tetrahydrate, sodium chlorate and bromacil. Background information on these herbicides can be found in the supplement which was distributed with the parent document. The supplement was entitled "Herbicide Background Information, Supplement to the Environmental Statement: Herbicide Use on National Forests of Alaska. 1/

Summaries of each herbicide use program along with maps of proposed treatment areas are included in Appendix A.

Only herbicides which meet Environmental Protection Agency (EPA) registration requirements are proposed for use. Herbicides are to be used in full compliance with label instructions. Precautions to be taken during herbicide application are included in program summaries (Appendix A).

The proposed action will have no effects on National Register properties or on those eligible for inclusion in the National Register. It will not contribute to the preservation and enhancement of any non-federally owned properties of historical, architectural, or archeological significance. The proposed action will be reviewed by the Alaska State Historic Preservation Officer.

1/ A limited number of single copies of the parent document and the supplement are available upon request to Regional Forester John A. Sandor, U.S.D.A. - Forest Service, P.O. Box 1628, Juneau, Alaska 99802.

ROAD RIGHTS-OF-WAY HERBICIDE

USE PROGRAMS

I. Road Rights-of-Way Programs

A. Description

These programs propose the use of herbicides to inhibit growth of unwanted plants along selected segments of the road rights-of-way on the Tongass and Chugach National Forests. The target species are, depending on the program, alder, willow, birch, aspen, spruce and hemlock.

Growth inhibition of target plants will prevent them from physically blocking the traveled way, causing safety hazards to motorists and interfering with normal repair and maintenance.

United States Forest Service personnel will use herbicides along forest roads principally to stop damage to road surfaces by encroaching vegetation. Established alder over 3 feet high will be cut mechanically. Stumps and other low target plants will be spot-treated with 2,4-D isooctyl ester at a rate of 6 pounds active ingredient per acre. Herbicide will be applied with hand-pumped knapsack compression sprayers. Forest road rights-of-way will be treated a maximum of 4 feet outside the shoulder and ditch line. One herbicide application will be made at each selected site during the period of May through August 1977.

Alaska State Department of Highways personnel will use herbicides on alder, willow, birch, aspen, spruce and hemlock on selected sites of State Highway rights-of-way. Growth inhibition of target plants will increase road safety, reduce maintenance costs and help in establishment of grassy species. Woody plants will be sprayed with a mixture of trisopropanolamine salts of 2,4-D and picloram with truck-mounted hydraulic sprayers, or picloram pellets will be broadcast on the soil above the root systems. Rights-of-way will be treated a maximum of 20 feet from each side of the road.

One herbicide application with touch-up as needed will be made by the State Department of Highways at selected sites during 1977. Application time-periods will be: April through July for picloram pellets, and for the mixture of 2,4-D and picloram.

B. Environmental Effects

Environmental effects, both favorable and adverse, are outlined in this Environmental Impact Statement Addendum. For more detail concerning effects of 2,4-D isooctyl ester and picloram the reader should consult the parent document.

1. Favorable Effects

a. Use of herbicides in rights-of-way vegetation control programs significantly decreases cost of the programs when compared to use of mechanical methods only.

b. Brush control along road rights-of-way on sharp curves, intersections and other stretches of road with limited visibility provides greater safety to vehicle operators and passengers.

2. Adverse Effects Including Any that are Unavoidable

a. Use of herbicides may bring about adverse reactions by those opposed to introduction of synthetic chemicals into the environment.

b. In times of high unemployment use of labor-saving methods precludes the forming of new jobs.

c. Small amounts of herbicide are likely to be introduced into the air, water and soil.

d. Growth of many woody plants and broadleaved annual and perennial herbaceous plants is inhibited by 2,4-D esters. There will be a potential hazard to susceptible non-target plants near treatment areas.

e. Some terrestrial animals are likely to come in contact or ingest small quantities of herbicide residues. None of the rare or endangered animal species of Alaska are known to occur in herbicide treatment areas. Acute toxicity of picloram is approximately 2,000 mg/kg for birds and rodents. Acute toxicity of borax to rodents ranges from 2,660 to 5,190 mg/kg.

f. Aquatic organisms may be exposed to small amounts of herbicide residues due to spray drifting, leaching and runoff into lakes, streams, and estuaries.

g. Soil microorganisms in and near treatment areas will be exposed to herbicide residues. There is no evidence that herbicides applied at the proposed rates will adversely affect microbial populations.

h. Persons applying the herbicides may come in contact with the chemicals but are unlikely to experience any adverse physical or physiological effects.

i. There is a possibility of human ingestion of small amounts of herbicide residue when herbicide spray is applied during the fruiting stage of salmonberry and other wild plants having edible fruits that occur within the treatment areas.

C. Alternatives to the Proposed Action

The following alternatives are discussed in the parent document:

(1) inaction (2) mechanical removal only, (3) herbicide application only (Forest Service), (4) burning and (5) biological control.

D. Relationship Between Short-Term Uses of the Environment and the Maintenance of Long-Term Productivity

In these programs the short-term use of the environment (i.e. rights-of-way vegetation control with use of herbicides) will enable continued safe use of roads being use in logging operations and of State roads. This is important to the economy and well-being of the areas.

It is impossible to calculate accurate long-term values of the road rights-of-way vegetation control program to the road system because of the many variables involved. We can predict, however, that these programs will uphold, if not increase, the present values of the road systems to those people who use them.

E. Irreversible or Irretrievable Commitment of Resources

Implementation of these programs will result in the minor use of petroleum based products involved in the production and application of herbicides. No petroleum products will actually be applied to target plants. No plant or animal species will show irreversible effects as a result of these programs. There will be no significant irreversible or irretrievable commitment of resources.

RAILROAD RIGHTS-OF-WAY HERBICIDE

USE PROGRAM

II. Railroad Rights-of-Way Program

A. Description

This program involves the use of herbicides for growth inhibition of target plants along the railroad rights-of-way on the Chugach National Forest.

Within the ballasted areas elimination of all vegetation is essential for proper track maintenance. This procedure facilitates drainage, increases life of ties, reduces fouling of ballast and lowers fire danger. Outside the ballasted area target plants are alder, black poplar and horsetail. Control of these plants facilitates operation and maintenance activities, reduces accumulation of snow, decreases fire danger and improves the view.

On a 50-foot wide strip along the roadbed, target plants in the outer 15 feet on either side will be spot-treated with a mixture of triisopropanolamine salts of picloram and 2,4-D. The herbicide will be applied at a rate of 5 pounds active ingredient per acre as required for control of alder, black poplar and horsetail. Hand or mechanical brush cutting will be employed whenever practical. Cut stems of brush will be sprayed to control new growth.

The middle 20 feet (ballasted area) will be treated with a mixture of bromacil and amitrole to inhibit all vegetative growth. Rate of application will be 4.8 pounds active ingredient per acre for bromacil and .9 pound active ingredient per acre for amitrole.

B. Environmental Effects

For more detail on the environmental effects outlined below, the reader should consult the parent document.

1. Favorable Effects

- a. Use of herbicides significantly reduces vegetation control costs along railroad rights-of-way when compared to use of hand or mechanical methods only.
- b. Rights-of-way vegetation control contributes significantly to the safe operation of trains.
- c. In the opinion of some people vegetation control improves the appearances of railroad rights-of-way.
- d. Elimination of vegetation in the ballasted area prevents fuel build-up and, thus, decreases fire hazard.

2. Adverse Environmental Effects Including Any that are Unavoidable

- a. A vegetation control program involving the use of herbicides may bring about adverse reactions by those opposed to introduction of synthetic chemicals into the environment.
- b. In times of high employment use of labor-saving control methods precludes the forming of new jobs.
- c. Small amounts of herbicides are likely to be introduced into the air, water and soil.
- d. Use of herbicides can present a potential hazard to non-target plants. Proper application techniques will essentially eliminate the hazard.
- e. Small amounts of herbicide residue may be ingested by a few terrestrial animals. There is no evidence that the very small amounts likely to be ingested by an individual will adversely affect that animal.
- f. Minute amounts of herbicides may enter waters near application areas. Residues will be at a low level with little or no chance of adversely affecting aquatic life.
- g. Herbicide residues in the soil will have no detrimental effects on soil microorganisms.
- h. Humans most likely to come in contact with herbicides are the applicators. If application program is conducted properly, applicators and people in surrounding areas are unlikely to experience any adverse physical or physiological effects.

C. Alternatives to the Proposed Action

The following alternatives are discussed in the parent document: (1) inaction, (2) mechanical removal only, (3) herbicide application only, (4) burning and (5) biological control.

D. Relationship Between Short-Term Uses of the Environment and the Maintenance of Long-Term Productivity

As with roads, the value of railroad rights-of-way maintenance is difficult to evaluate. Deriving a value system which is acceptable to everyone is probably impossible. We can predict that the present values of the railroad will be upheld, if not increased, by continuation of rights-of-way vegetation control programs.

E. Irreversible or Irretrievable Commitment of Resources

Implementation of this program will result in the minor use of petroleum based products in the equipment used in the production and application of herbicides. No petroleum products will actually be applied to target plants. No plant or animal species will show irreversible effects as a result of this program. There will be no significant irreversible or irretrievable commitment of resources.

POWERLINE RIGHTS-OF-WAY

HERBICIDE USE PROGRAM

III. Powerline Rights-of-Way Program

A. Description

The Alaska Power Administration is responsible for vegetation control around the Snettisham powerplant, switchyards, submarine cable terminal stations and along the transmission line.

To provide for effective line maintenance, it is essential to control brush and weeds around the transmission line structures, guy wires, helicopter landing pads and some spots along the line trail. The most abundant pest species along the line is alder. Blueberry and salmonberry may also interfere, but not as frequently.

At selected areas along the transmission line, picloram pellets will be spread around target plants with a hand spreader or a small power spreader at a rate of 2 pounds active ingredient per acre. Larger trees in danger of interfering with the line will be cut.

Control of brush, weeds, and grass in submarine cable terminal stations and switchyards is essential to prevent interference with electrical equipment and electrical circuits. In addition, proper drainage of substations and switchyards is allowed by elimination of grassy species. Lack of any vegetation in these areas reduces the fire hazard substantially.

Areas in submarine cable terminal stations and switchyards and around ground project buildings will be treated with a granular formulation of a mixture of 66.5 percent sodium metaborate tetrahydrate, 30 percent sodium chlorate, and 1.5 percent bromacil. The herbicide will be applied with a hand spreader at a rate of 100 to 200 pounds per acre.

One herbicide application per each selected area will be made during the period of June through August.

B. Environmental Effects

As in the other programs the reader should consult the parent document for more information of the effects outlined below.

1. Favorable Effects

a. The cost of vegetation control is reduced through use of herbicides when compared to mechanical control methods.

b. Control of vegetation prevents it from interfering with transmission lines and other electrical equipment, thus reducing equipment repair costs and helping to circumvent untimely failure of equipment.

c. Elimination of vegetation within substation and switchyard boundaries greatly reduces the fire hazard.

2. Adverse Effects Including Any That Are Unavoidable

a. Any program involving the use of chemical herbicides generally brings about adverse reactions from some individuals.

b. Small quantities of herbicide residues are likely to enter into the air, water and soil in or near treatment area.

c. If proper application procedures are not followed some non-target plants near treatment areas could be adversely affected.

d. Some terrestrial animals may come in contact with herbicide residues. No adverse physical or physiological effects are expected.

e. Aquatic life may be exposed to some herbicide residue which will be at unharmed levels of concentration.

f. Humans may come in contact with small amounts of herbicides but adverse effects are highly improbable.

C. Alternatives to the Proposed Action

The following alternatives are discussed in the parent document: (1) inaction, (2) mechanical removal only, (3) burning and (4) biological control.

D. Relationship Between Short-Term Uses of the Environment and the Maintenance of Long-Term Productivity

Vegetation control helps power companies provide continuous service with fewer interruptions.

Power outages are extremely inconveniencing and may cause monetary losses to some people. The value of avoiding power outages is incalculable but is easily worth the cost of an adequate vegetation control program.

E. Irreversible or Irretrievable Commitment of Resources

Implementation of this program will result in the minor use of petroleum based products in equipment used in the production and application of herbicides. No petroleum products will actually be applied to target plants. No plant or animal species will show irreversible effects as a result of this program. There will be no significant irreversible or irretrievable commitment of resources.

HERBICIDE USE PROGRAM
FOR
ALASKA DEPARTMENT OF HIGHWAYS RIGHTS-OF-WAY

(Appendix A)

Herbicide Use Program for
Alaska Department of Highways Rights-of-way

1. Target Species

Target species are alder and willow along the Seward Highway. Along the Copper River Highway, target species are alder, willow, aspen, birch, spruce and hemlock.

2. Herbicides Proposed

Potassium salt of 4-amino-3,5,6,-trichloropicolinic acid (Tordon 10K Pellets) as granules. Acid equivalent is 10 percent. E.P.A. Registration No. 464-320-AA.

Mixture of triisopropanolamine salt of picloram and triisopropanolamine salt of 2,4-D (Tordon 101 mixture) as an emulsifiable concentrate. Acid equivalents are 5.7 percent for picloram and 21.2 percent for 2,4-D. E.P.A. Registration No. 464-306-AA.

Copies of herbicide specimen labels for Tordon 10K Pellets and Tordon 101 Mixture appear in Appendix B.

3. Method and Time of Treatment

Tordon 101 Mixture applied at a rate of 1 gallon per 100 gallons of water and applied at a rate of 3 gallons Tordon 101 per acre. Applied using either a truck-mounted boom-type sprayer or a backpack sprayer.

Tordon 10K Pellets hand distributed as a spot-treatment in selected areas. Dense stands of brush treated at a rate of 60-85 pounds of pellets per acre depending upon the target species. General mixed brush stands treated at a rate of 75 pounds per acre.

Herbicides applied once during the period of April-July ^{1/} in treatment areas along the Seward Highway and once during the period of May-July 15, in treatment areas along the Copper River Highway.

4. Precautions

Herbicides are not to be applied within 100 feet of water bodies.

Tordon 101 is not to be sprayed when winds exceed 10 miles per hour or where there is danger of contact to:

1. Ornamentals, gardens or other desirable vegetation in residential areas.
2. Areas of heavy public use such as picnic areas.
3. Livestock grazing areas.
4. Croplands.

^{1/} The National Environmental Policy Act of 1969 (P.L. 91-190) requires that the entire environmental statement process be completed prior to approval of the proposed projects.

Picloram is not to be applied during heavy rains when there is surface water flow or where there is danger of contact to:

1. Swampy or poorly drained areas.
2. Ornamental trees or shrubs in residential areas.
3. Large desirable spruce, hemlock or cottonwood.

Applicators are to follow instructions of herbicide labels and all of the above precautions. They are to wear suitable protective clothing including respirators or protective masks if there is danger of herbicide inhalation.

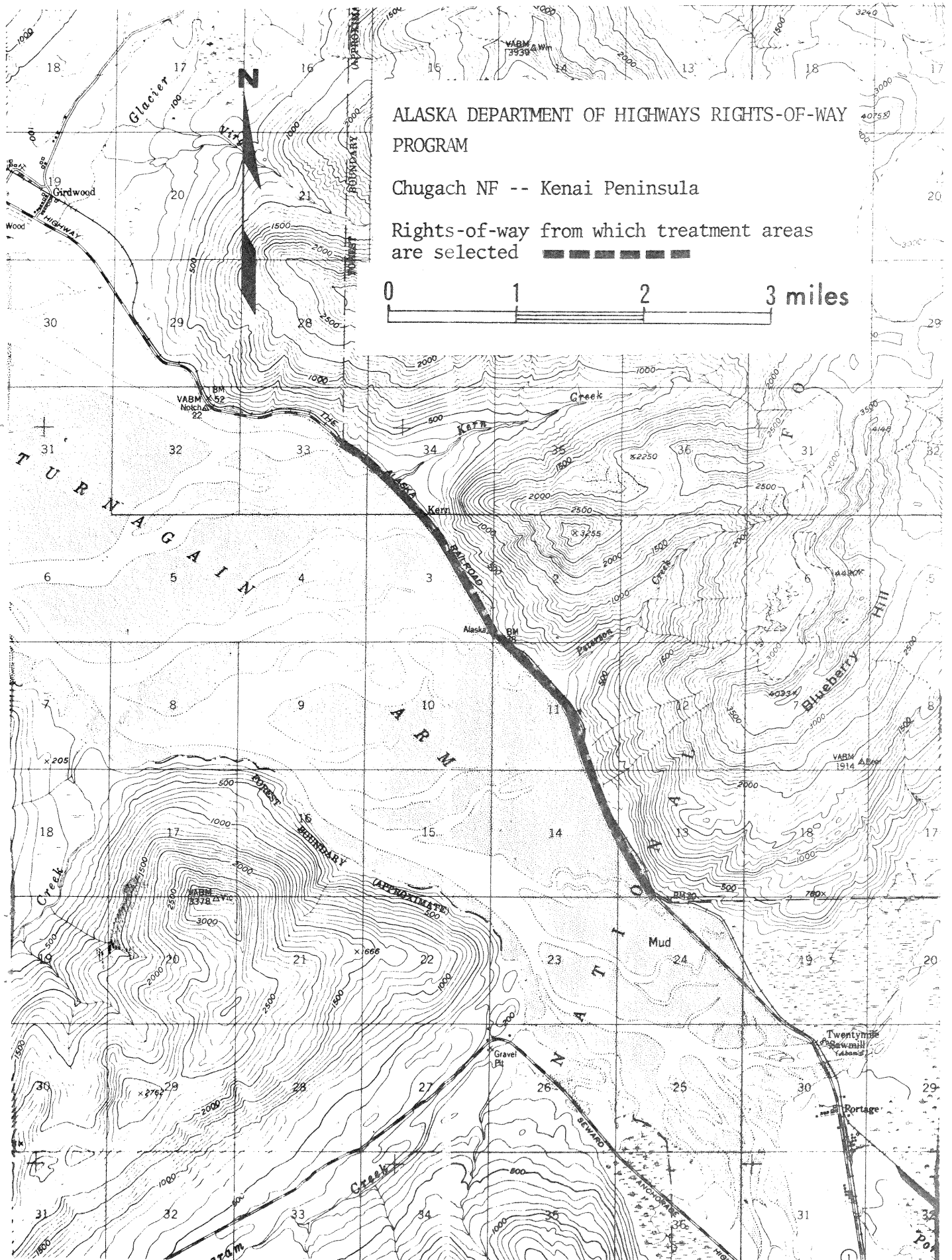
5. Treatment Areas

Selected areas along approximately 32 miles of road on the Chugach National Forest. Section of roads from which treatment areas will be selected are listed below along with the herbicides to be used.

1. Cordova (Tordon 101 Mixture and Tordon 10K Pellets): Copper River Highway between MP (Milepost) 5 and MP 19, MP 28 and MP 34, and MP 41 and MP 49.
2. Kenai Peninsula, (Tordon 10K Pellets and Tordon 101 Mixture): Seward-Anchorage Highway between MP 82 and MP 86.

Maps of the treatment areas are shown on following pages.

A horizontal number line is shown with tick marks at 0, 1, 2, and 3 miles. The segment between 1 and 2 is further divided into four equal sub-segments by three additional tick marks, representing intervals of 1/4 mile each.



HERBICIDE USE PROGRAM
FOR
U. S. FOREST SERVICE ROAD RIGHTS-OF-WAY

(Appendix A)

Herbicide Use Program for
U.S. Forest Service Road Rights-of-way

1. Target Species

Major target species is alder. Minor target species include other woody plants in the treatment area.

2. Pesticide Proposed

Isooctyl ester of 2,4-D dichlorophenoxyacetic acid (Esteron 6E) as an emulsifiable concentrate. Acid equivalent is 62.6 percent. E.P.A. Registration No. 464-347-AB.

A copy of the herbicide specimen label appears in Appendix B.

3. Method and Time of Treatment

Herbicide mixed at rate of 4-5 pints per 100 gallons water and applied as a liquid spray. Alder over 3 feet high cut mechanically; stumps and other target species treated at a rate of 6 pounds active ingredient per acre with backpack sprayer. Forest roads treated 4 feet outside shoulder and ditch line.

One application in the period of May through August.

4. Precautions

A 50-foot buffer strip is to be left adjacent to water bodies (i.e., no spraying within 50 feet of water bodies). No spraying is to be done during winds exceeding 10 miles per hour, or in areas of known concentrated wild berry picking.

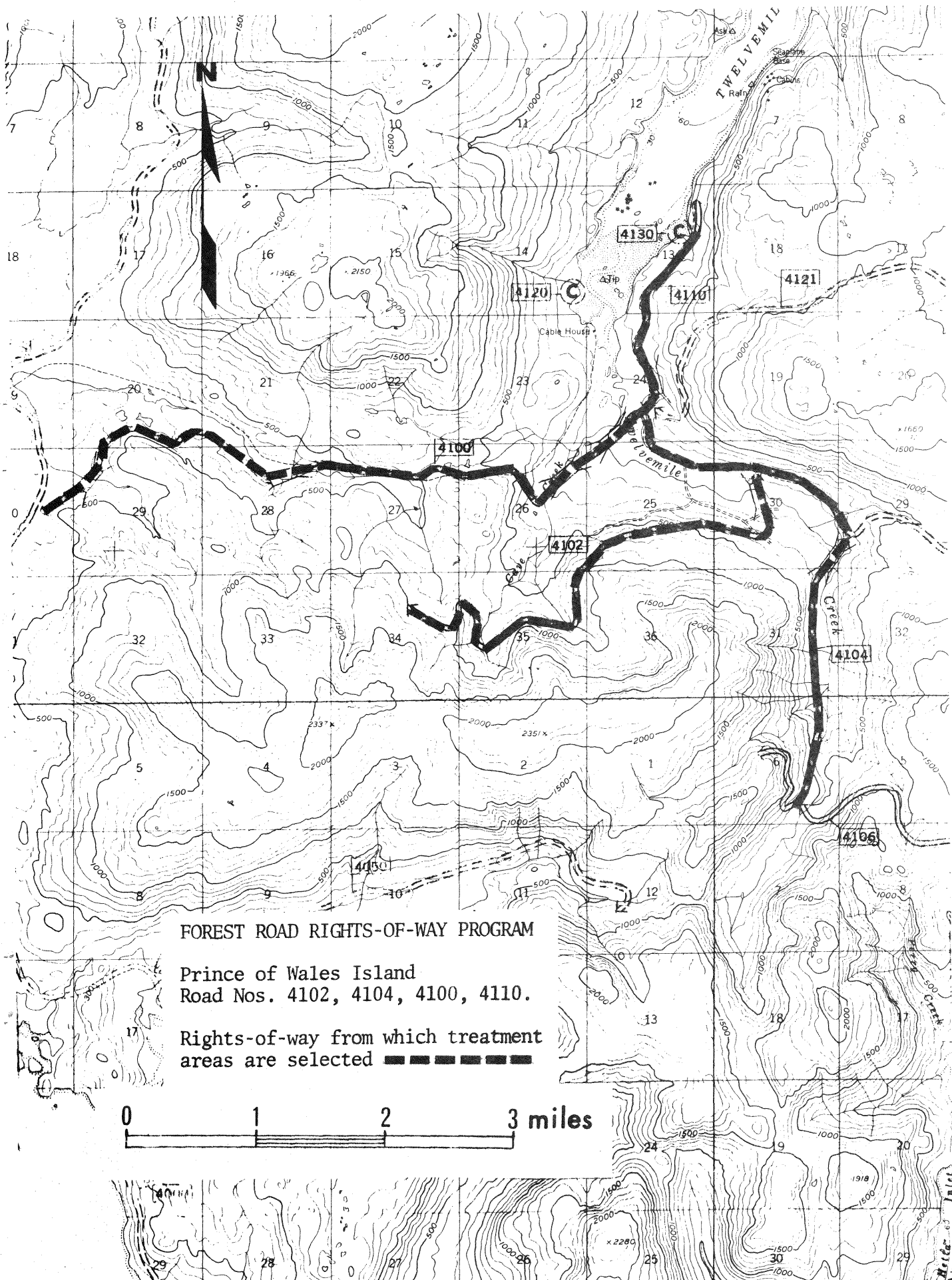
Applicators are to follow label directions and are to wear suitable protective clothing.

Special care is to be taken in cleaning equipment, and herbicide containers will be disposed of in compliance with Environmental Protection Agency regulations.

5. Treatment Areas


Include sections of rights-of-way along 8 Forest Development Roads in the Ketchikan Area of the Tongass National Forest. Road numbers and number of miles from which treatment areas will be selected are: 4100 (7.5 miles), 4102 (4.0 miles), 4358 (5.0 miles), 4110 (1.5 miles), 4104 (3.0 miles), 5579 (5.0 miles), 5578 (3.0 miles), 5577 (2.0 miles).

Maps of treatment areas are shown on following pages.



FOREST ROAD RIGHTS-OF-WAY PROGRAM

Prince of Wales Island
Road Nos. 4102, 4104, 4100, 4110.

Rights-of-way from which treatment
areas are selected 

0 1 2 3 miles


W A L E S

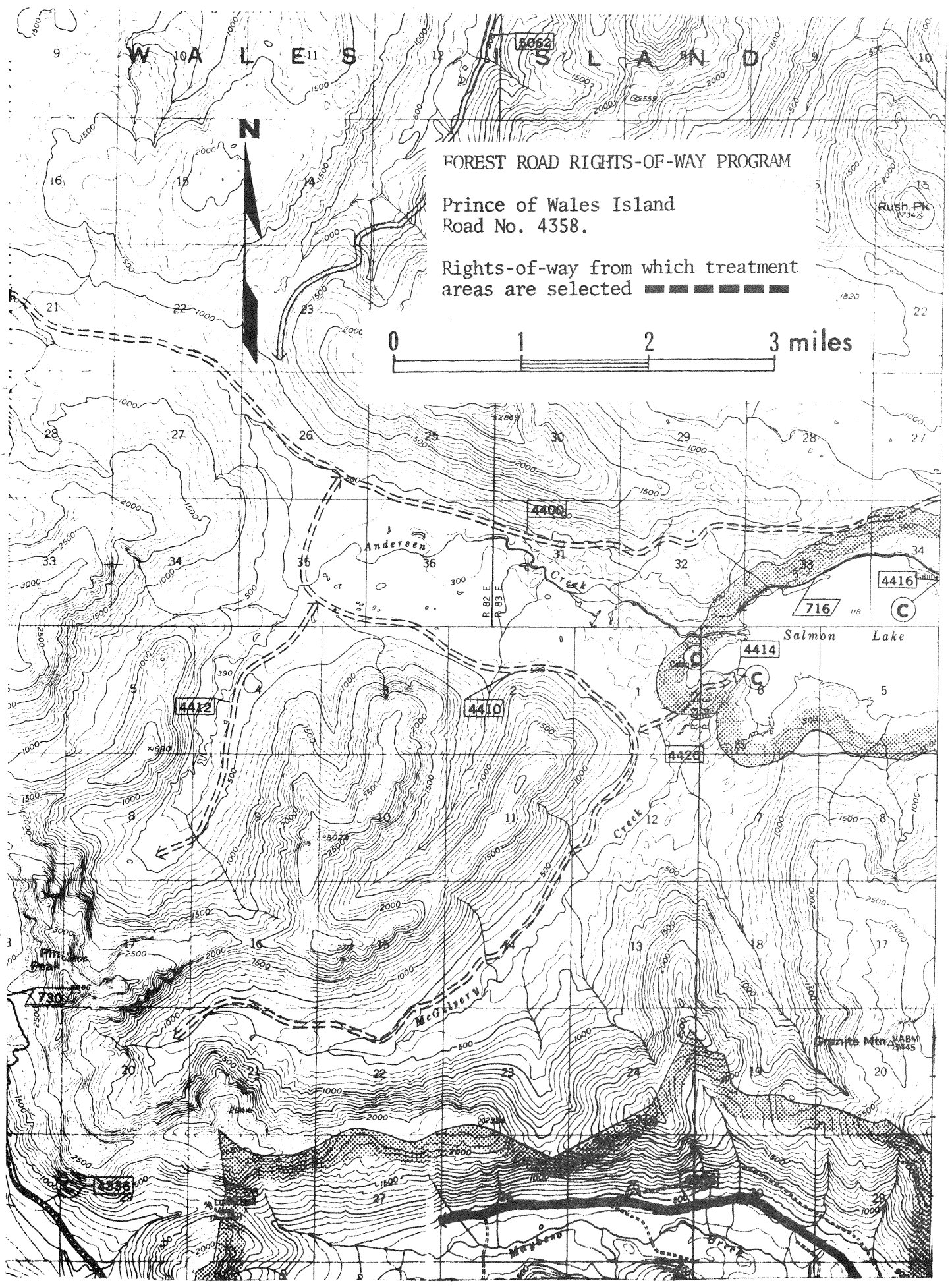
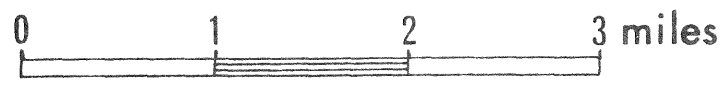
I S L A N D

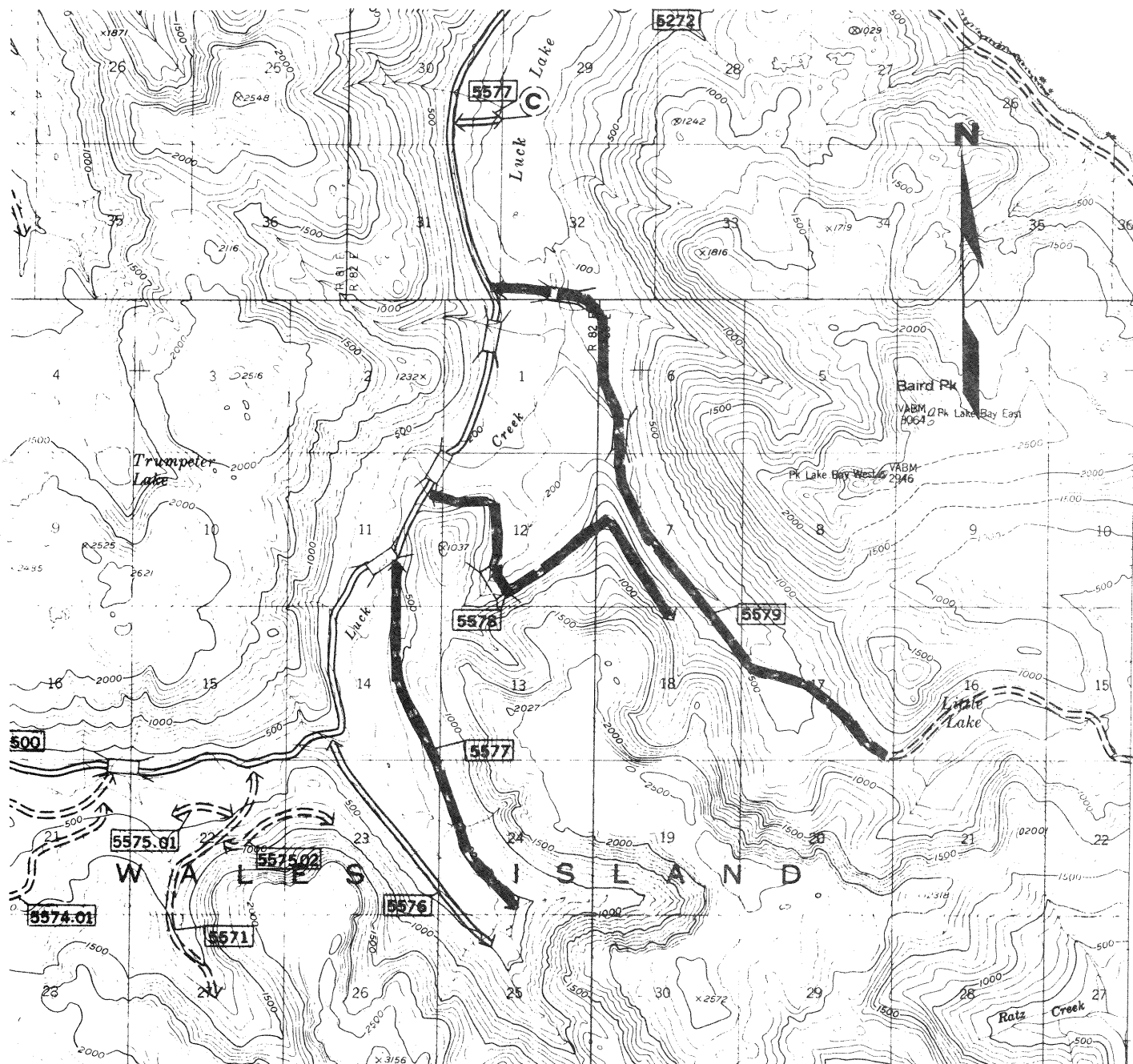
N

FOREST ROAD RIGHTS-OF-WAY PROGRAM

Prince of Wales Island
Road No. 4358.

Rights-of-way from which treatment
areas are selected 





FOREST ROAD RIGHTS-OF-WAY PROGRAM

Prince of Wales Island
Road Nos. 5577, 5578, 5579.

Rights-of-way from which treatment
areas are selected 5577 5578 5579

0 1 2 3 miles

HERBICIDE USE PROGRAM
FOR
ALASKA RAILROAD RIGHTS-OF-WAY

(Appendix A)

Herbicide Use Program for Alaska Railroad Rights-of-way

1. Target Species

All vegetation within the middle 20 foot (ballasted area) of a 50-foot wide strip along the roadbed; alder, black poplar and horsetail on outer 15 feet either side of the strip.

2. Herbicides Proposed

Mixture of triisopropanolamine salt of picloram and triisopropanolamine salt of 2,4-D (Tordon 101 Mixture) as an emulsifiable concentrate. Acid equivalents are 5.7 percent for picloram and 21.2 percent for 2,4-D. E.P.A. Registration No. 464-306-AA.

Bromacil (Hyvar X) as a wettable powder with 80 percent active ingredients. E.P.A. Registration No. 352-287-AA.

Amitrole (Amizol) as a water soluble powder with 90 percent active ingredients. E.P.A. Registration No. 264-119.

A copy of each herbicide specimen label appears in Appendix B.

3. Method and Time of Treatment

Ballasted area sprayed with a mixture of Hyvar X, Amizol and water. Application rates are 4.8 pounds active ingredients per acre of Hyvar X and .9 pounds active ingredient of Amizol. The spraying is to be done from a 2400 gallon tank mounted on a truck with high rail equipment, with a side arm mounted sprayer. One application during period of June through August.

Alder, black poplar and equisetum along either side of tracks sprayed with mixture of Tordon 101 Mixture and water. Applied with truck mounted sprayer with a 2400 gallon tank at rate of 5 pounds active ingredient per acre. Apply as required during June through August.

Larger vegetation near water bodies, and spruce, cut with hand tools.

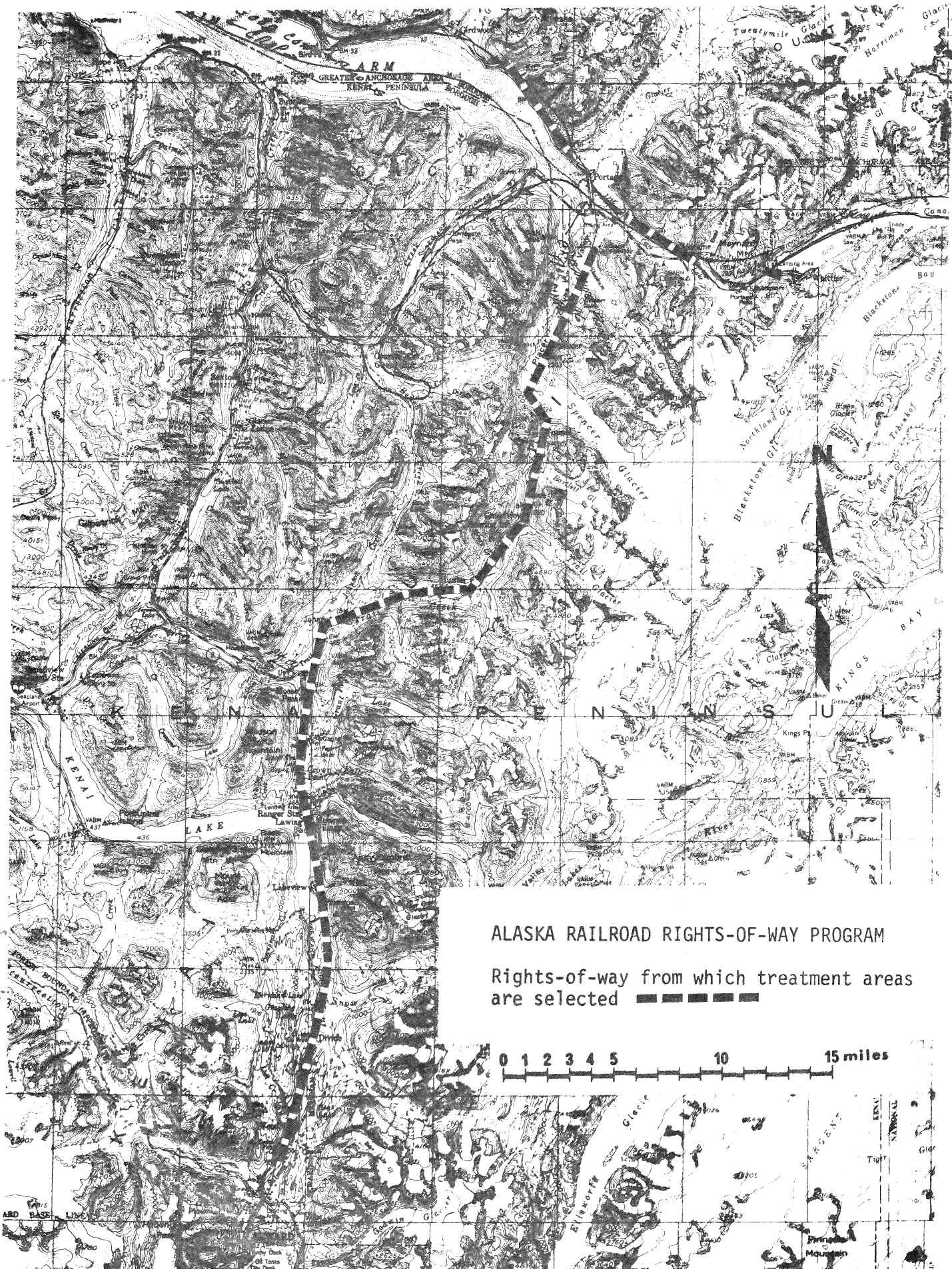
4. Precautions

No treatment is to be applied within 100 feet of water bodies or during winds exceeding 10 miles per hour.

Applicators are to wear suitable protective clothing and are to follow label directions.

5. Treatment Areas

Approximately 96 acres between MP (Milepost) 6 and MP 71 on the Alaska Railroad and 4 acres between MP 1.5 and MP 10.5 on the Whittier Branch of the Alaska Railroad. All areas are within the Chugach National Forest (see map on following page).



ALASKA RAILROAD RIGHTS-OF-WAY PROGRAM

Rights-of-way from which treatment areas
are selected ■■■■■

Herbicide Use Program for
Alaska Power Administration Rights-of-Way

Herbicide Use Program for
Alaska Power Administration Rights-of-way

1. Target Species

Alder, blueberry, and other interfering weeds and brush around transmission line structures, guy wire anchors, and helicopter landing pads.

All vegetation in submarine cable terminal stations and switchyards.

2. Pesticides Proposed

Mixture of sodium metaborate tetrahydrate, sodium chlorate, and bromacil (Ureabor) in granular form. Active ingredients are: 66.5 percent sodium metaborate tetrahydrate, 30 percent sodium chlorate, and 1.5 percent bromacil. E.P.A. Registration No. 1624-90.

Potassium salt of 4-amino-3,5,6-trichloropicolinic acid (Tordon 10K Pellets) in granular form. Acid equivalent is 10 percent. E.P.A. Registration No. 464-320-AA.

A copy of each herbicide specimen label appears in Appendix B.

3. Method and Time of Treatment

Tordon 10K Pellets applied as needed for brush and weed control on 2-foot wide strip around transmission line tower bases and guy wire anchors. Also applied on a 10-foot wide strip around helicopter landing pads. Pellets applied by a hand spreader or a small power spreader at rate of 2 pounds active ingredient per acre.

One application of Tordon at each selected site during June through August.

Ureabor applied to: all vegetation in all areas within fences of submarine cable terminal stations and switchyards and 1 to 2 feet outside the fences; areas along foundation of project buildings; and around bases of wood pole transmission structures. Herbicides will be spread with a hand spreader or a small power spreader at rate of 100 to 200 pounds of Ureabor per acre.

Selected sites treated once during June through August.

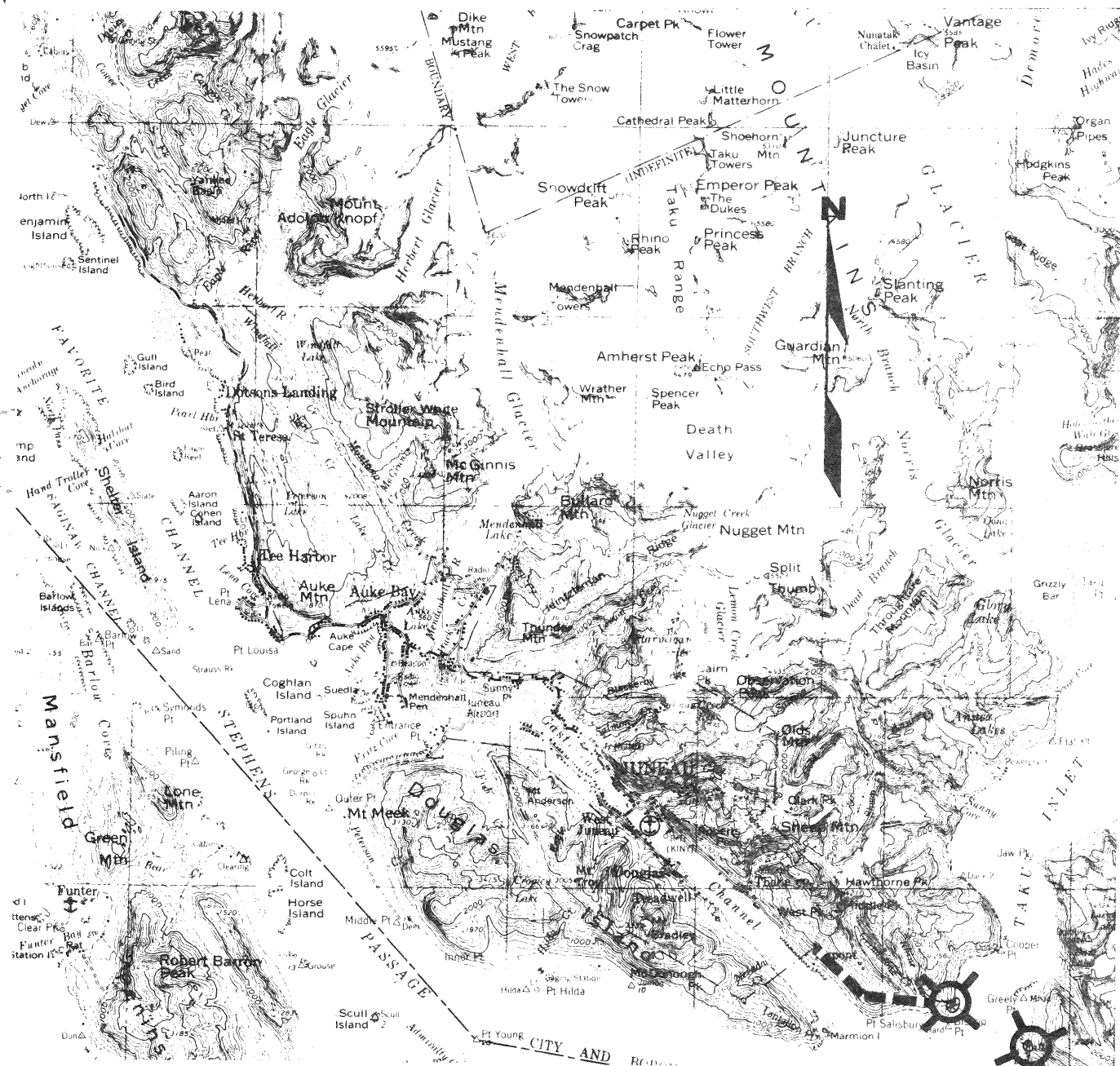
4. Precautions

No application is to be made within 100 feet of lakes and streams or when winds exceed 10 miles per hour.

Applicators are to follow label directions.

5. Treatment Areas

Tordon 10K is to be applied to selected sites on the approximately 520 acres of Snettisham transmission line right-of-way from the main powerplant to Juneau. Ureabor is to be applied to selected sites on approximately 25 acres around project buildings and structures in submarine cable terminal stations and switchyards. All areas are within the Tongass National Forest (see maps on following pages).



ALASKA POWER ADMINISTRATION RIGHTS-OF-WAY PROGRAM

Rights-of-way from which treatment areas
are selected

Submarine cable terminal station



APPENDIX B
HERBICIDE SPECIMEN LABELS



ESTERON* 6E

HERBICIDE

SPECIMEN LABEL

CONCENTRATED EFFECTIVE LOW VOLATILE

Contains Isooctyl Esters of 2,4-D • 2,4-D Acid Equivalent: 6 pounds per gallon

*For the Control of Many Broadleaf Weeds, Herbaceous Perennials and Woody Plants
Susceptible to 2,4-D in Grass Pastures, Certain Crops and Non-Crop Areas.*

ACTIVE INGREDIENT:

2,4-Dichlorophenoxyacetic Acid, Isooctyl Esters	94.4%
INERT INGREDIENTS:	5.6%
2,4-D Acid Equivalent 62.6% — 6 pounds per gallon	

E.P.A. Registration No. 464-347-AB

CAUTION

**KEEP OUT OF REACH OF CHILDREN
MAY CAUSE IRRITATION • HARMFUL IF SWALLOWED**

Avoid Contact with Eyes, Skin and Clothing

WEED LIST

ESTERON 6E herbicide is recommended for control of numerous broadleaf weeds and certain 2,4-D susceptible woody plants without injury to most established grasses. Species controlled include the following, plus many others:

beggaricks	crotan	mallow, Venice	ragweed	sweetclover
bitterweed	dandelion	manzanita	rape, wild	tansymustard
bluweed, Texas	docks	marshelder	redstem	tansyragwort
broomweed	dogfennel	milkvetch	sage, coastal	thistle, bull
buckbrush	elderberry	morningglory,	sagebrush, big	thistle, musk
buckwheat, wild	fanweed	annual	sagebrush, sand	thistle, Russian
burdock	galinsoga	mustards	salsify	tumbleweed
burhead	garlic, wild	nettles	sand shinnery oak	velvetleaf
carpetweed	goatsbeard	onion, wild	shepherdspurse	vervains
cattnip	halogeton	pennycress	sicklepod	vetch
chamise	hemp, wild	pepperweed, field	smartweed	water plantain
chicory	jewelweed	pigweed	sneezeweed, bitter	willow
cocklebur	jimsonweed	plantains	sowthistle, annual	witchweed
coffeeweed	kochia	poorjoe	spanishneedles	wormwood
comflower	lambsquarter	rabbitbrush	sumac	yellow racket
covatebrush	loco, bigbend	radish, wild	sunflower	yellow starthistle

REPLACES SPECIMEN LABEL 86-1175 PRINTED IN U.S.A. IN JULY, 1973

REPLACES SPECIMEN LABEL 86-1175 PRINTED IN NOVEMBER, 1972.

REVISION INCLUDES: RANGELAND AND GRASS PASTURES PARAGRAPH REVISED.

USE DIRECTIONS

Apply ESTERON 6E as water or oil spray during warm weather when weeds or brush are actively growing. Application under drought conditions often will give poor results. Use low spray pressure to minimize spray drift. On cropland and other sensitive areas, do not exceed 20 psi pressure. Apply enough spray volume to provide uniform coverage of weeds and brush, usually 5 to 20 gallons per acre by ground equipment and 1 to 5 gallons by aircraft. Higher gallonage may be used if desired to improve spray coverage. Generally, the lower dosages recommended on this label will be satisfactory for young, succulent growth of sensitive weed species. For less sensitive species and under conditions where control is more difficult, the higher dosages will be needed. For crop use, do not mix with oil or other adjuvants unless specifically recommended on this label. Deep rooted perennial weeds, such as Canada thistle and field bindweed and many woody plants, usually require repeated applications for maximum control. Do not apply ESTERON 6E where spray drift may contact nearby susceptible crops or other desirable plants or may contaminate water for irrigation or domestic use. Read and follow all Use Precautions given on this label.

NOTE: If there are uncertainties concerning specific pests, pest situations or specific crop sensitivity tolerances to 2,4-D, consult your Agronomist, Extension Specialist or Estrogen Specialist for advice.

TO PREPARE THE SPRAY: (1) Fill the spray tank about half full with water, then add the required amount of ESTERON 6E with agitation, and finally the rest of the water. **NOTE:** ESTERON 6E in water forms an emulsion which tends to separate unless the mixture is kept agitated. (2) If oil is added, first mix the ESTERON 6E with the oil and then add this mixture to the water. However, with adequate agitation, these can be added after the ESTERON 6E is mixed in the water. (3) If straight oil is used, agitation is required and separation does not occur. Do not allow any water to get into the oil herbicide mixture to avoid formation of an invert emulsion.

WEED CONTROL IN SMALL GRAINS NOT UNDERSEEDED WITH A LEGUME: **NOTE:** Do not permit dairy animals or meat animals being housed for slaughter to forage or graze treated grain fields within 2 weeks after treatment.

Spring Wheat and Barley: Apply 1 to 2 pint per acre. Spray when grain is in full tiller stage (usually 4 to 8 inches tall) but before the boot stage and when weeds are small. Do not apply before the tiller stage nor from early boot to the dough stage. Higher rates may be required to control certain weeds but crop injury may occur.

Winter Wheat and Rye: Apply 1 to 2 pint per acre in the spring of the full tiller stage but before the early boot stage.

Spring Seeded Oats: Apply 1 to 2 pint per acre at the full tiller stage but before the early boot stage. Oats are less tolerant to 2,4-D than wheat or barley and are more likely to suffer some injury.

SPECIMEN LABEL (BACK)

USE PRECAUTIONS

Do not apply ESTERON 6E herbicide directly to, or otherwise permit it to come into contact with cotton, grapes, fruit trees, vegetables, flowers or other desirable crop or ornamental plants which are sensitive to 2,4-D herbicide. Do not permit spray mist containing it to drift onto them, since even very small quantities of the spray, which may not be visible, can cause severe injury during both growing and dormant periods. Use coarse sprays to minimize drift. With ground equipment, spray drift can be lessened by keeping the spray boom as low as possible, by applying 20 gallons or more of spray per acre, by using no more than 20 pounds spraying pressure with flat fan or floating flat fan nozzle tips, by spraying when wind velocity is low, and by stopping all spraying when wind exceeds 6 to 7 miles per hour. Do not apply with hollow cone type insecticide or other nozzles that produce fine droplet spray. With aircraft application, drift can be lessened by applying not less than 5 gallons of spray per acre, by using no more than 20 pounds spray pressure of the nozzles, by using nozzles which produce a coarse spray pattern, and by spraying only when the wind velocity is less than 5 miles per hour.

Applications by aircraft, ground rig and hand dispenser should be carried out only when there is no hazard from spray drift. Do not apply in the vicinity of cotton, grapes, tomatoes or other desirable 2,4-D susceptible crop or ornamental vegetation. Do not spray when the wind is blowing towards susceptible crops or ornamental plants.

At high temperatures (above 95 F.) vapors from this product may injure susceptible plants growing nearby. Do not use in greenhouse. Excessive amounts of this herbicide in the soil may temporarily inhibit seed germination or plant growth.

Do not contaminate irrigation ditches or water used for irrigation or domestic purposes. To avoid injury to desirable plants, do not handle or apply other agricultural chemicals with the same equipment used for ESTERON 6E except as specified on this label. This product can be stored in an unheated building that is not fireproofed, provided the containers are properly labeled and the building is not used for storage of other flammable liquids.

When used, mixing with water in non-complacent spray from water supplies is allowed. Follow local recommendations for container disposal.

Local conditions may affect the use of herbicides. Consult your State Agricultural Experiment Station or Extension Service weed specialists for advice in selecting the appropriate label to best fit local conditions. Be sure that use of this product conforms to all applicable regulations. Apply this product only as specified on this label.

CAUTION

**KEEP OUT OF REACH OF CHILDREN
MAY CAUSE IRRITATION • HARMFUL IF SWALLOWED
Avoid Contact with Eyes, Skin and Clothing**

NOTE: Since we specify that the product conforms to certain specifications, and a representative of the purchaser should at the time when used or stored observe the directions under warning conditions of use, buying this spray only for any other use than for WEEDKILLING or FITNESS FOR A PARTICULAR PURPOSE is extremely dangerous to the user's health and safety. Be sure that you use this herbicide only for the purposes for which it is intended. Do not use it for any other purpose. Do not use it for any other purpose. Do not use it for any other purpose.

THE DOW CHEMICAL COMPANY

AND SUBSIDIARIES

MIDLAND, MICHIGAN 48640 USA ZÜRICH, SWITZERLAND HONG KONG, CHINA
CORAL GABLES, FLORIDA 33134 USA SARNIA, ONTARIO, CANADA
*Trademark of THE DOW CHEMICAL COMPANY

Fall Seeded Oats (Southern) Grown for Grain: Apply 1/2 to 1 pint per acre after full tillering but before the early boot stage. Some difficult weeds may require higher rates for maximum control but crop injury may result. Do not spray during or immediately following cold weather.

Preharvest Treatment: Apply 1/2 to 1 1/2 pints per acre when grains are in the hard dough stage to control large weeds that may interfere with harvest. Best results will be obtained when soil moisture is sufficient to cause succulent weed growth. **NOTE:** Do not feed treated straw to livestock.

WEED CONTROL IN CORN: Use one of the following three programs. **Preemergence:** Apply 1 1/2 to 2 1/2 pints per acre to soil anytime after planting but before corn emerges. Do not use on light sandy soil. **Emergence:** Apply 1/2 pint per acre just as corn plants are breaking ground. **Postemergence:** After emergence of corn, use 1/2 pint per acre. Application of 1/2 to 2 1/2 pints per acre may be needed for maximum control of some weeds but such rates are more likely to injure the corn. If corn is over 8 inches tall, use drop nozzles to keep the spray off the corn foliage as much as possible. Do not apply from the tasseling to dough stage. Do not use with oil, urethane or other adjuvants. Crop injury is more likely to occur if corn is growing rapidly under high temperature and high soil moisture conditions. To reduce breakage of stalks from temporary brittleness caused by 2,4-D, delay cultivation for 8 to 10 days after treatment. **NOTE:** Hybrids vary in response to 2,4-D and some are easily injured. Spray only varieties known to be tolerant to 2,4-D. Contact seed company, Agricultural Experiment Station or Extension Service weed specialists for this information.

WEED CONTROL IN SORGHUM (MILO): Apply 1/2 pint per acre when sorghum is 5 to 15 inches tall. A higher rate of 1/2 to 1 pint per acre may be needed to control some weeds but the chance for crop injury is likewise increased. Do not use with oil. Do not treat before the sorghum is 5 inches tall nor during the boot, flowering or early dough stages. If sorghum is taller than 8 inches, use drop nozzles to keep the spray off the foliage as much as possible. Some varieties are very sensitive to 2,4-D and some hybrids are also sensitive. Spray only varieties known to be tolerant to 2,4-D and some hybrids are also sensitive. Spray only varieties known to be tolerant to 2,4-D. Contact seed company and Extension Service authorities for this information.

WEED CONTROL IN GRASS SEED CROPS: Use 1/2 to 1 pint per acre in the amount of water required for uniform application by air or ground equipment. Apply to established stands in spring from the tiller to early boot stage. Do not spray in boot stage. New spring seedlings may be treated with the lower rate after the grasses have at least five leaves. Perennial weed regrowth may be treated in the fall.

WEED AND BRUSH CONTROL IN RANGELAND AND GRASS PASTURES: **NOTE:** Do not graze dairy animals on treated areas within 7 days after application. Do not use on hard grasses, alfalfa, clover or other legumes or on newly seeded pastures. Do not apply after heading begins or when grass is in the boot to milk stage where grass seed production is desired.

Bitterweed, Broomweed, Croton, Docks, Kochia, Marshelder, Muskthistle and Other Broadleaf Weeds: Use 2 1/2 pints of ESTERON 6E per acre in the amount of water needed for uniform application. If the weeds are young and growing freely, 1 1/2 pints per acre will provide control of some species. Deep-rooted perennial weeds may require repeated treatments in the same year or in subsequent years.

Wild Garlic and Wild Onion: Apply 2 1/2 to 4 pints per acre, making three applications (fall, spring, fall or spring, fall, spring) starting in late fall or early spring.

Weed Control in Newly Sprigged Coastal Bermudagrass: Apply 1 1/2 to 2 1/2 pints per acre preemergence and/or postemergence.

Sand Shinnery Oak and Sand Sagebrush: On the oak, use 1 1/2 pints in 5 gallons of oil or in 4 gallons of water plus 1 gallon of oil per acre. Apply by aircraft between May 15 and June 15. On the sagebrush, use 1 1/2 pints in 3 gallons of oil per acre and apply by aircraft when foliage is fully expanded and the brush is actively growing.

Big Sagebrush and Rabbitbrush: Use 2 1/2 to 4 pints per acre in 2 to 3 gallons of oil or in 3 to 5 gallons of oil-water emulsion spray. For rabbitbrush, the 4 pint rate is usually required. Brush should be treated out and growing actively when treated. Retreatment may be needed.

Chamise, Manzanita, Buckbrush, Coastal Sage, Coyotebrush and Certain Other Chaparral Species: Use 2 1/2 to 4 pints per acre in 5 to 10 gallons of water. One gallon of fuel oil may be included in the spray mixture for added effectiveness. Make applications by aircraft or ground equipment to obtain uniform spray coverage. For effective control, the brush must be fully leaved out and growing actively when sprayed. Retreatment may be needed.

WOODY PLANT CONTROL IN NON-CROP AREAS: To control species susceptible to 2,4-D in right of ways, fence rows, roadsides, and along drainage ditchbanks, spray brush up to 5 to 8 feet tall after spring foliage is well developed, using 4 to 5 pints of ESTERON 6E in 100 gallons of water and wetting all parts of the brush including foliage, stems and bark. This may require up to 400 gallons of spray per acre for adequate coverage of solid stands of brush. Make application in such a way as to prevent drift of the spray off the area being treated. Spraying can be effective at any time up to 3 weeks before frost as long as soil moisture is sufficient for active growth of the brush. Control will be less effective in mid-summer during hot dry weather when soil moisture is deficient and plants are not actively growing. 2,4-D is not effective on most species of evergreen shrubs and trees.

WEED CONTROL IN NON-CROP AREAS SUCH AS LAWNS, GOLF COURSES, CEMETERIES, PARKS, AIRFIELDS, ROADSIDES, VACANT LOTS, DRAINAGE DITCH BANKS: Apply 1 1/2 to 4 pints of ESTERON 6E per acre in the amount of water needed for uniform application. Usually 2 1/2 pints per acre provides good weed control under average conditions. Treat when weeds are young and growing well. Do not use on golf greens nor on dichondra or other broadleaf herbaceous ground covers. Do not use on creeping grasses such as bent and St. Augustine except for spot treating, nor on newly seeded turf until grass is well established. Reseeding of treated areas should be delayed following treatment. With spring application, reseed in the fall; with fall application, reseed in the spring. Legumes are usually damaged or killed so do not treat areas where the legumes are desired. Deep-rooted perennial weeds may require repeated treatments in the same season or in subsequent years.

TULE (BULRUSH) AND OTHER RUSHES: Mix 2 1/2 pints of ESTERON 6E and 1 gallon of diesel oil or kerosene then add this mixture to 100 gallons of water. Spray to wet all foliage (400 to 800 gallons per acre). Addition of a wetting agent may be advisable. Apply in the spring during flower head emergence. Respray if needed when regrowth is 3 to 5 feet tall.

SPOT TREATMENT: To control broadleaf weeds in small non-cropland areas with a hand sprayer, use 1/2 pint of ESTERON 6E in 3 gallons of water and spray to thoroughly wet all weed foliage. Keep spray mixture agitated to prevent separation.

STORAGE: May be stored in unheated building.



SPECIMEN LABEL
REDUCED TO 79%

TORDON 101

MIXTURE

WEED AND BRUSH KILLER

ACTIVE INGREDIENTS

Picloram(4-amino-3,5,6-trichloropicolinic acid) as the triisopropanolamine salt . 10.2%
2,4-dichlorophenoxyacetic acid as the triisopropanolamine salt . 39.6%

INERT INGREDIENTS 50.2%

ACID EQUIVALENTS: 4-amino-3,5,6-trichloropicolinic acid ... 5.7%
2,4-dichlorophenoxyacetic acid 21.2%

E.P.A. Registration No. 464-306-AA
E.P.A. Est. 464-MI-1

CAUTION

KEEP OUT OF REACH OF CHILDREN
HARMFUL IF SWALLOWED
CAUSES EYE INJURY
COMBUSTIBLE LIQUID

MAY CAUSE SKIN IRRITATION

Avoid Contact with Eyes, Skin and Clothing
Wash Well After Handling or Use
Keep Container Closed

Keep Away From Heat and Open Flame

When handling concentrate wear suitable eye protection. In case of eye contact, promptly flush with plenty of water; and get medical attention. Remove contaminated clothing and wash before reuse.

AGRICULTURAL CHEMICAL

Do Not Ship or Store with Food, Feeds, or Clothing

PRECAUCION AL USUARIO: Si usted no lee inglés, no use este producto hasta que la etiqueta le haya sido explicada ampliamente.

TRANSLATION: (TO THE USER: If you cannot read English, do not use this product until the label has been fully explained to you.)

5 GAL / 18.9 L

86-1160 PRINTED IN U.S.A. IN NOVEMBER, 1974

REPLACES SPECIMEN LABEL 86-1160 PRINTED IN JUNE, 1970

REVISIONS INCLUDE: (1) EPA ESTABLISHMENT NUMBER ADDED
(2) AGRICULTURAL CHEMICAL STATEMENT ADDED (3) SPANISH
WARNING ADDED (4) FLAMMABLE LIQUID N.O.S. DIAMOND ADDED

TORDON 101 MIXTURE

WEED AND BRUSH KILLER

GENERAL INFORMATION

TORDON 101 Mixture weed and brush killer is recommended for control of unwanted annual and perennial broadleaved weeds and woody plants and vines on non-crop areas including industrial manufacturing and storage sites, right-of-ways such as electrical power lines, communication lines, pipelines, highways and railroads.

Among the annual and perennial broadleaved weeds controlled by TORDON 101 Mixture are:

Bindweed, Field	Goldenrod	Snakeweed
Bouncingbet	Horsenettle	Sowthistle
Carrot, Wild	Knapweed	Spurge, Leafy
Chicory	Russian	Thistle, Canada
Clover, Sweet	Milkweed	Thistle, Musk
Clover, Wild	Plantain	Toadflax
Dandelion	Prickly Lettuce	Dalmatian
Dock	Ragweed, Bur	Toadflax, Yellow
Flabane	Ragweed, Common	Vetch, Wild

Among the woody plants and vines controlled by TORDON 101 Mixture are:

Ailanthus	Cherry	Honeysuckle	Sassafras
Alder	Douglas Fir	Kudzu	Sourwood
Aspen	Elm	Locust	Spruce
Birch	Fir, Balsam	Maple	Sumac
Blackberry	Gorse	Oak	Tulip Poplar
Bracken Fern	Gum	Persimmon	Wild Rose
Butturbush	Hemlock	Pine	Willow
Cedar	Hickory	Poison Oak	

USE DIRECTIONS

Use TORDON 101 Mixture at rates of 1/2 to 3 gallons per acre to control broadleaved weeds and at rates of 1 to 4 gallons per acre to control woody plants and vines. In all cases use the amounts specified in enough water to give thorough and uniform coverage of the plants to be controlled. **Note:** TORDON 101 Mixture does not mix readily with oil.

For best results applications should be made when weeds and brush are actively growing. Applications in late summer when the plants are mature or during period of drought may result in less effective control. Treatment will not cause permanent, if any, damage to common established grasses.

HIGH VOLUME LEAF-STEM TREATMENT: Use TORDON 101 Mixture at the rate of 1 gallon in water to make 100 gallons of spray to control broadleaved weeds, vines and other woody plants. Apply after the foliage is well developed and in a manner to give thorough spray coverage. For woody plants, up to 6 to 8 feet tall, use a drenching spray and wet all leaves, stems, and root collars. For hard to kill species such as oak and oak oak, soak the soil around the root collar. **Note:** Do not allow the spray to contact desirable plants, and do not soak the soil over roots of such plants.

LOW VOLUME GROUND OR AERIAL FOLIAGE TREATMENT: For these uses the required amount of TORDON 101 Mixture should be applied in a total spray volume of 10 to 25 gallons per acre, depending upon the plant species, height and density of growth. The preferred volume range is 15 to 25 gallons per acre. For these (LOW VOLUME) uses, TORDON 101 Mixture should be used only in thickened (high viscosity) spray mixtures. Such mixtures should be prepared using NORBAK® particulating agent as directed in a separate publication "INSTRUCTION MANUAL FOR NORBAK® PARTICULATING AGENT WITH HERBICIDES" (available from The Dow Chemical Company) and in the accompanying "GUIDE TO INGREDIENT NEEDS AND PROCEDURES TO FOLLOW FOR MIXING SPRAYS CONTAINING TORDON 101 MIXTURE PLUS NORBAK PARTICULATING AGENT". Thickened sprays prepared by using high viscosity inert emulsions or other drift reducing systems may

be utilized if they are made oil drift free as are mixtures containing NORBAK particulating agent mixed according to manufacturer's directions.

Broadleaved Annual and Perennial Weed and Woody Vine Control: Use TORDON 101 Mixture at rates of 2 quarts to 3 gallons per acre in 15 to 25 gallons of a water spray mixture containing the amount of NORBAK particulating agent required to provide the recommended thickness. Apply to grassland weeds and vines any time after growth begins in the spring and before the ground freezes in the fall. **For seasonal control of vigorously growing stands of field bindweed:** Canada thistle or mixtures of these with susceptible annual weeds such as ragweed, dandelion, plantain, clovers and dock use 2 to 3 quarts of TORDON 101 Mixture per acre in 15 to 25 gallons of water spray containing NORBAK particulating agent. **In arid areas and for control of more resistant perennial weeds use 1 to 3 gallons of TORDON 101 Mixture per acre in 15 to 25 gallons of spray containing NORBAK particulating agent.** Use 1 to 1.5 gallons per acre to control species such as Canada thistle, field bindweed and milkweed. The higher rates should be used under drought stress conditions and for the more resistant species such as bouncingbet, leafy spurge, toadflax and woody vines.

Woody Plant Control: Use TORDON 101 Mixture at the rate of 1 to 4 gallons per acre in 15 to 25 gallons of a water spray mixture containing NORBAK particulating agent. **For susceptible seedling stages of species** such as aspen, cherry, and sumac use 1 to 1.5 gallons of TORDON 101 Mixture per acre in 15 to 25 gallons of a water spray mixture containing NORBAK particulating agent. **For more mature and/or less susceptible species** such as willow, butturbush, black locust, sassafras, sumac, tulip poplar and cherry growing in sandy loam soil, use 2 to 3 gallons of TORDON 101 Mixture per acre in 15 to 25 gallons of a water spray mixture containing NORBAK particulating agent.

For more resistant brush such as maple, pine, sourwood, blackgum, cedar and oak where growing on heavy clay soils

GUIDE TO INGREDIENT NEEDS AND PROCEDURES TO FOLLOW FOR MIXING SPRAYS CONTAINING TORDON 101 MIXTURE PLUS NORBAK PARTICULATING AGENT

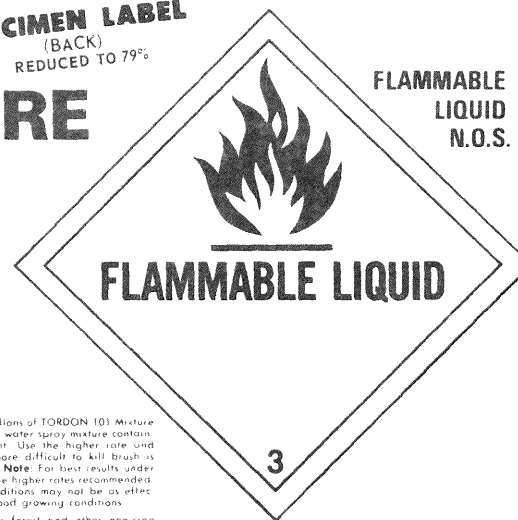
Gallons to use per acre		Amounts of each ingredient needed to prepare 100 gallons of spray mixture		Required reading for funnel test in seconds	
TORDON 101 Mixture	Spray Mixture	TORDON 101 Mixture (gallons)	NORBAK Particulating Agent	For use in ground equipment	For use in aerial equipment
0.5	15 to 25	2.5	97.5	5 lb - 10 oz	40 to 65
1.0	15 to 25	3.0	95.0	7 lb - 3 oz	40 to 65
2.0	15 to 25	10.0	90.0	9 lb - 0 oz	40 to 65
3.0	15 to 25	15.0	85.0	10 lb - 10 oz	40 to 65
4.0	20 to 25	20.0	80.0	12 lb - 8 oz	40 to 65

Summary Instructions For Mixing TORDON 101 Mixture with NORBAK Particulating Agent

- For high concentration mixtures - (2 to 4 gal TORDON 101 Mixture in 15 to 25 gal spray/A)**
 - With agitation, make a 1 to 1 mixture of TORDON 101 Mixture and water in spray tank.
 - With continuing agitation, slowly add desired amount of NORBAK particulating agent.
 - With continuing agitation, add remainder of water required.
 - With continuing agitation, wait 20 minutes, then make funnel test. If necessary adjust thickness to recommended range in seconds.
- For low concentration mixtures - (1 1/2 to 2 gal TORDON 101 Mixture in 15 to 25 gal spray/A)**
 - Direct mixing in spray tank**
 - With agitation, put all of required TORDON 101 Mixture and water in tank.
 - With continuing agitation, add desired amount of NORBAK particulating agent through powder dispenser.
 - Follow procedure in I (d), above.
 - Mixing in smaller auxiliary tank before transfer to the spray tank**
 - With agitation, make a 1 to 1 mixture of TORDON 101 Mixture and water.
 - Add to this mixture the desired amount of NORBAK particulating agent.
 - Transfer this mixture to the spray tank containing the remainder of required water, under agitation.
 - Follow procedure in I (d), above.

Amounts are those needed when sprayed at rate of 20 coverage of 15 to 25 gallons per acre. Adjust accordingly for other use rates.
For complete mixing instructions and detailed directions on how to make the funnel test and determine the required readings, consult manufacturer's publication, "INSTRUCTION MANUAL FOR USING NORBAK PARTICULATING AGENT WITH HERBICIDES".

SPECIMEN LABEL
(BACK)
REDUCED TO 79%



FLAMMABLE LIQUID N.O.S.

FLAMMABLE LIQUID

With Frill or Girdle Method: Make a single girdle through the bark completely around the tree at a convenient height. Wet the cut surface with the diluted solution.

Both above methods may be used successfully at any season except during periods of heavy sap flow of certain species. For example maples.

USE PRECAUTIONS

Do Not Allow Spray Drift: TORDON 101 Mixture is highly active and may cause injury to desirable plants. It may cause injury to such plants if applied during either growing or dormant periods. Do not use high pressure sprays. Do not apply or otherwise permit TORDON 101 Mixture or sprays containing it to contact desirable plants such as flowers, other ornamental plants, vegetables, grapes, fruit trees, cotton, tobacco, tomatoes, potatoes, beans, of all types including soybeans, and other valuable broadleaved plants, nor the soil containing roots of such valuable plants. Apply TORDON 101 Mixture only when there is little or no wind and no hazard from drift. Coarse sprays are most likely to drift.

Do Not Contaminate Water: To avoid injury to crops or other desirable plants, do not treat or allow spray drift to fall along inner banks or bottom of irrigation ditches.

Other Precautions: Do not store near food, feedstuff, fertilizer, seeds, insecticides, fungicides or other pesticides. To avoid injury to desirable plants, containers and sprayers used for TORDON 101 Mixture should not be reused to contain or apply other materials.

Rinse equipment and containers thoroughly with water and dispose of wastes by burying in non-crop areas away from water supplies. Containers should be disposed of by punching holes in them and burying with waste.

NOTICE: Seller warrants that the product conforms to its chemical description and is reasonably fit for the purpose stated on the label when used in accordance with directions under normal conditions of use, but neither this warranty nor any other warranty of MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE expressed or implied extends to the use of this product contrary to label instructions or under abnormal conditions or under conditions not reasonably foreseeable to seller, and buyer assumes the risk of any such use.

U.S. Patent No. 3,285,925

THE DOW CHEMICAL COMPANY

AND SUBSIDIARIES

MIDLAND, MICHIGAN 48660 USA ZÜRICH, SWITZERLAND HONG KONG, CHINA

CORAL GABLES, FLORIDA 33134 USA SARNIA, ONTARIO, CANADA

* Trademark of THE DOW CHEMICAL COMPANY



SPECIMEN LABEL

TORDON* 10K

PELLETS

BRUSH KILLER

ACTIVE INGREDIENT:

Picloram (4-amino-3,5,6-trichloropicolinic acid) potassium salt..... 11.6%

INERT INGREDIENTS:..... 88.4%

Picloram acid equivalent..... 10.0%

E.P.A. Registration No. 464-320-AA

E.P.A. Est. 33774-CA-1 FF ; 33774-UT-1 FS

Superscript used corresponds to letter in Lot No.

CAUTION

KEEP OUT OF REACH OF CHILDREN

Read Complete Precautions on Rear Panel

50 LB.

AGRICULTURAL CHEMICAL

Do Not Ship or Store with Food, Feeds, or Clothing

PRECAUCION AL USUARIO: Si usted no lee inglés, no use este producto hasta que la etiqueta le haya sido explicada ampliamente.

TRANSLATION: (TO THE USER: If you cannot read English, do not use this product until the label has been fully explained to you.)

86-1162 PRINTED IN U.S.A. IN DECEMBER, 1974

REPLACES SPECIMEN LABEL 86-1162 PRINTED IN NOVEMBER AND APRIL, 1974

REVISIONS INCLUDE: (1) EPA ESTABLISHMENT NUMBER ADDED (2) AGRICULTURAL CHEMICAL STATEMENT ADDED (3) SPANISH WARNING ADDED (4) PATENT NUMBER ADDED.

SPECIMEN LABEL
(BACK)



TORDON^{*} 10K PELLETS

**50 LB.
BRUSH KILLER**

For the Control of Unwanted Woody Plants Particularly on Utility Rights-of-Way and on Industrial Sites.

ACTIVE INGREDIENT:

Picloram (4-amino-3,5,6-trichloropicolinic acid) potassium salt... 11.6%

INERT INGREDIENTS... 88.4%

Picloram acid equivalent... 10.0%

E.P.A. Registration No. 464-320-AA

E.P.A. Est. 33774-CA-1 FF; 33774-UT-1 FS

Superscript used corresponds to letter in Lot No.

TORDON 10K Pellets, a highly effective brush killer, is designed to be applied to the soil for the control of undesirable woody plants. It is intended for use on utility rights-of-way such as electrical power lines, communication lines, pipelines, highways and railroads. It also can be used in forests and on industrial sites. TORDON 10K Pellets may be applied as spot or broadcast treatments. The application method and equipment used should assure uniform distribution of the recommended dosage over the treated area. Rapid response should not be expected. Maximum effects of treatment with TORDON 10K Pellets do not become apparent until after the chemical has been carried by moisture into the root zones of the woody plants. TORDON 10K Pellets are non-corrosive to application equipment, non-volatile, and non-flammable.

USE DIRECTIONS

TORDON 10K Pellets may be applied at anytime soil is not frozen. However, best results are obtained from application in the spring before growth begins or during periods of vigorous growth when subsequent rainfall can be expected. Distribute TORDON 10K Pellets uniformly by spot or broadcast treatment to the soil over the roots of woody plants to be controlled. **READ AND FOLLOW ALL USE PRECAUTIONS ON THIS LABEL.**

Broadcast application is the preferred method of treatment for dense stands of brush. Use TORDON 10K Pellets at the rate of 20 to 85 pounds/acre (approximately 1/2 to 2 pounds per 1,000 square feet) and distribute evenly over the entire area where brush is to be controlled.

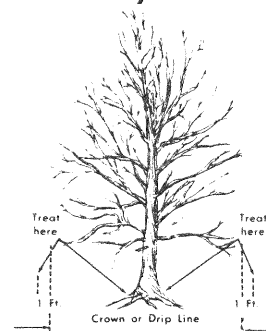
To control hawthorne, kudzu, redbud and sumac and certain other easy-to-control species, use TORDON 10K Pellets at the rate of 20 to 50 pounds per acre.

To control moderately susceptible species such as aspen, brambles, buttonbrush, chokecherry, conifers, dogwood, elderberry, juniper sp., locusts and mulberry, maple and sassafras use TORDON 10K Pellets at the rate of 60 pounds per acre.

To control solid stands of hard-to-kill species such as ash, blackgum, cypress, gallberry, hickory, oak and sourwood use TORDON 10K Pellets at the rate of 85 pounds per acre.

To control stands of mixed brush species (from moderately susceptible to hard-to-kill species) use TORDON 10K Pellets at the rate of 75 pounds per acre.

Spot application is preferred for treating individual trees or scattered stands of brush. Spread TORDON 10K Pellets evenly on the soil over the root systems of individual trees or clumps of trees or brush at the rate of 3 ounces per 100 square feet of soil surface.



USE PRECAUTIONS

Apply this product only as specified on this label.

Avoid use in certain areas: The active ingredient in TORDON 10K Pellets is highly active and can remain in the soil for more than one growing season. Very small amounts can injure sensitive crops and many broadleaf plants. Therefore, do not apply on or near blueberries, tobacco, potatoes, soybeans, beans, most vegetable crops or shade trees, ornamentals, flowers, and fruit plants.

The active ingredient in TORDON 10K Pellets is water soluble and should not be applied where surface water from treated areas can run off to crop lands either planted or to be planted.

Avoid movement of treated soil: TORDON 10K Pellets herbicide may remain in treated soil for an extended period. Do not move treated soil to other areas and do not use such soil to grow plants.

Avoid water contamination: Do not allow TORDON 10K Pellets to contaminate water used for irrigation, drinking, or other domestic purposes. Do not apply on inner banks or bottoms of irrigation ditches. Do not apply on areas from which surface run off water may go into streams, ponds, or wells supplying irrigation water. Do not clean containers or application equipment on or near these areas.

Avoid improper storage and equipment use: Do not store near fertilizers, seeds, insecticides, fungicides or other pesticides. Containers and equipment used for TORDON 10K Pellets should not be used for other agricultural chemicals since small residues of TORDON 10K Pellets herbicide can damage desirable plants.

Avoid improper disposal: Rinse equipment and containers and dispose of waste by burying in non-cropland away from water supplies. Do not reuse containers. Bury them with waste or dispose in a sanitary landfill. Where required, follow official local container disposal regulations.

Be sure that use of this product conforms to all applicable regulations.

CAUTION

KEEP OUT OF REACH OF CHILDREN
Read Complete Precautions on Side Panel

NOTICE: Seller warrants that the product conforms to its chemical description and is reasonably fit for the purposes stated on the label when used in accordance with directions under normal conditions of use, but neither this warranty nor any other warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE, express or implied, extends to the use of this product contrary to label instructions or under abnormal conditions not reasonably foreseeable to seller, and buyer assumes the risk of any such use.

11002-008-2

U.S. Patent No. 3,285,925

H1274

THE DOW CHEMICAL COMPANY

AND SUBSIDIARIES

MIDLAND, MICHIGAN 48640, USA ZÜRICH SWITZERLAND HONG KONG, BCC
CORAL GABLES, FLORIDA 33134, USA SARNIA, ONTARIO, CANADA

*Trademark of THE DOW CHEMICAL COMPANY

AMIZOL® Industrial Herbicide

**For general weed control
in industrial and
similar non-crop areas**

**Use alone or in combination
with other weed control herbicides
having long residual action**

CAUTION: Keep out of the reach of children. See other cautions.

ACTIVE INGREDIENT:

Amitrole (3-amino-1, 2, 4-triazole) 90%

INERT INGREDIENTS: 10%

DIRECTIONS FOR USE

I—Use AMIZOL® alone:

	Amounts per Acre	
	AMIZOL	Water
a— To control annual grass and broadleaf weeds where residual control is not required, spray when most weeds are 3-4 inches tall.	2 lbs.	100 gal.
b— To control annual grasses, annual and perennial broadleaf weeds and suppress perennial grasses, spray when most weeds are 6-10 inches tall.	4 lbs.	100 gal.
c— Cattails: treat after catkins are fully formed until frost. (1) ground application (2) aerial application	8-10 lbs. 10 lbs.	300 gal. 15 gal.
d— Poison ivy, poison oak: treat after leaves are fully developed in the spring until leaves start to turn color in the fall.	2 lbs.	100 gal.

II—Use Amizol combinations with Princep 80W:

	Amounts per Acre	
	AMIZOL	Princep
a— For seasonal control of most weeds where safety to nearby desirable trees, shrubs and ornamentals is important.	4 lbs.	12½ lbs.
b— For economical control of easy-to-control (annual) weeds; for areas with short growing seasons.	2 lbs.	6½ lbs.
c— For grass and broadleaf weed control in nurseries; ornamental plantings in median strips. Use a directional spray.	1 lb.s	2½ lbs.

CAUTION: Lilac, privet, honeysuckle, hollyhock and boxwood are susceptible to this mixture and may be injured if contacted by spray.

Where johnsongrass or bermudagrass is a problem, a mixture of AMIZOL and Telvar or Karmex is recommended.

III—Use AMIZOL combinations with Karmex or Telvar:

	Amounts per Acre	
	AMIZOL	Karmex or Telvar
a— For seasonal control of most weeds.	4 lbs.	20 lbs.
b— For economical control of easy-to-control (annual) weeds; for areas with short growing seasons.	2 lbs.	10 lbs.

CAUTION: Mixtures containing Telvar or Karmex should not be applied where material will wash or leach into the root zone of valuable trees or shrubs, since severe damage may result. We recommend using Karmex in high rainfall areas or where Karmex has given best results in the past. Use Telvar in areas of proportionately lower rainfall or where Telvar has given best results in the past.

IV—Use AMIZOL combinations with Sodium TCA 95%:

	Amounts per Acre	
	AMIZOL	Sodium TCA
a— For general control of most grass and broadleaf weeds.	5 lbs.	50 lbs.
b— For control of johnsongrass and bermudagrass, or heavy stands of other grasses.	5 lbs.	100 lbs.

NOTE: Use at least 1 gallon of water for each pound of Sodium TCA applied. Repeat applications will be necessary where annual weeds sprout following earlier applications. The combination of 5 lbs. AMIZOL plus 20 lbs. of Radapon is preferred in low rainfall areas.

V—Use AMIZOL combinations with Radapon:

	Amounts per Acre	
	AMIZOL	Radapon
For general control of cattails, phragmites and tules.		
(1) flooded sites	5 lbs.	25 lbs.
(2) non-flooded sites	2 lbs.	10 lbs.

VI—AMIZOL in Special Combinations:

To control existing vegetation and prevent reinvasion of weeds on railroad ballast and berm areas, highway shoulders and industrial areas, mix 1 to 4 lbs. AMIZOL per acre with one of the following residual herbicides.

AMOUNTS TO USE PER ACRE

	Arid areas or short growing seasons	Humid areas or full growing seasons	Where Mixtures May Be Used		
			Railroad Ballasts & Berm	Highway Shoulders	Industrial Areas
Aatrex® 80W (atrazine)	5-10 lbs.	20 lbs.		X	X
Hyvar® X (bromacil)	4 lbs.	10 lbs.	X		X
Karmex® (diuron)	5-10 lbs.	20 lbs.	X		X
Krovar® (bromacil + diuron)	3-6 lbs.	10 lbs.	X		
Princep® 80W (simazine)	5-10 lbs.	20 lbs.	X		X
Tandex® (karbutilate)	4 lbs.	10 lbs.			X
Telvar® (monuron)	5-10 lbs.	20 lbs.	X		

For faster knockdown of annual and perennial broadleaf weeds, add 1 to 4 qts. of 2, 4-D ester or amine per acre to the mixture of Hyvar X or Krovar with AMIZOL. To control puncturevine, Russian thistle or Kochia, add 1 to 3 gallons Fenac to mixtures of Hyvar X + AMIZOL or Aatrex + AMIZOL.

CAUTION: Mixtures containing Telvar, Karmex, Aatrex, Tandex, Fenac, Krovar or Hyvar X, should not be applied where material will wash or leach into the root zone of valuable trees or shrubs, since severe damage may result.

AMIZOL FOR WOODY PLANTS

Use AMIZOL in a right-of-way maintenance program as a special tool for cleaning up spot infestations of the species listed below. Most of these are killed to ground line by foliage sprays of 2, 4-D and 2, 4, 5-T, but resprout badly the next year. AMIZOL is a good translocator and kills most of the roots as well as the tops. AMIZOL is specific on the species listed. It should not be expected to kill other species.

Use the standard foliage stem method for high volume sprays along fencerows, highways and utility rights-of-way. Spray all foliage and stems of plants from the time foliage is fully developed until plants begin to go dormant. For effective control, all leaves, stems and suckers must be thoroughly wet to ground line.

Amounts to Use

SPECIES	Pounds AMIZOL per 100 gallons water
salmonberry	4
western dewberry (blackberry)	4
bigleaf maple	4
honeysuckle	4
kudzu	4
locust	3 to 4
ash	3 to 4
sumac	3 to 4

add 4 ounces of
spreader sticker per
100 gallons of water.

USE AMIZOL® COMBINATIONS FOR GENERAL WEED CONTROL

- I AMIZOL alone
- II AMIZOL and simazine (Princep 80W)
- III AMIZOL and monuron or diuron (Telvar or Karmex)
- IV AMIZOL and Sodium TCA 95%
- V AMIZOL and dalapon (Radapon)
- VI AMIZOL in special combinations

WHERE TO USE	Recommended Combinations (in order of preference)	WHERE TO USE	Recommended Combinations (in order of preference)
HIGHWAYS		INDUSTRIAL AREAS	
guard rails	II, IV, I	parking lots	II, III, VI
bridge abutments	II, III, IV, VI	tank farms	VI, III, II
shoulders	VI, II, III, IV, I	lumber yards	VI, II, III
center strips	II, III, IV, I, VI	open storage	VI, III, II
embankments	I, IV, II, III, VI	fence lines	II, III, IV, VI
RAILROADS		drive-in theaters	II, III, IV, VI
yards	VI, III, II, IV	NURSERIES	
around buildings	VI, II, III	liners	II
switches	VI, III, II	ornamentals	II
signal equipment	VI, III, II	AQUATIC SITES*	
loading areas	VI, III, II	ditch banks	I, V
ballast, berm	VI	drainage canals	I, V
PUBLIC UTILITIES		marshes	I, V
power substations	II, III, VI		
pole yards	II, III, VI		
parking areas	II, III, VI		
transmission towers	II, III, VI		
fence lines	II, III, IV		
woody plants	I		

GENERAL DIRECTIONS

By combining AMIZOL with residual-type weed control herbicides, you make a mixture that provides a rapid knockdown of existing vegetation, better control of deep rooted perennial weeds, and prevents most weed growth for one or more seasons.

WHEN TO USE

Apply AMIZOL combinations anytime weeds are green and actively growing. It is not necessary to apply these combinations before weeds come up.

Weeds treated after they have developed strong stems may remain standing for the rest of the season, even though they are dead. These standing weeds are unsightly and a fire hazard. Therefore, for most effective control of tall weeds, cut and remove the weeds, if possible, then spray the regrowth. For best results, treat when soil moisture is adequate for rapid weed growth.

MIXING SPRAYS

Use enough water to thoroughly wet weed foliage 50 to 100 gallons per acre. In highway spraying, a strip 8 feet wide and 1 mile long is about 1 acre. Dissolve the required amount of AMIZOL in water, then add the other product. Wettable powders require constant agitation while mixing and spraying.

AMIZOL or AMIZOL combinations with Telvar, Karmex, Hyvar, Krovar, Tandex, Aatrex and Princep are non-corrosive, nonflammable and nonvolatile. AMIZOL combinations with Sodium TCA or Radapon are nonflammable and nonvolatile, but sprayers should be washed out immediately after each use to prevent corrosion.

Some of the Weeds Controlled

alfalfa	foxtail	purslane
bluegrasses	goosegrass	quackgrass
Canada thistle	groundsel	ragweed
carpetweed	hempnettle	shepherdspurse
catch fly	jimsonweed	smartweed
chickweed	knotweed	sowthistle
chrysanthemum	kochia	stinkweed
weed (mugwort)	lambquarters	velvetgrass
cocklebur	mustard	white cockle
crabgrass	nightshade	wild buckwheat
dandelion	pigweed	wild oats
downy brome	plantain	witchgrass
(cheat)	poison ivy	yellow rocket

CAUTION

Harmful if swallowed. Avoid contact with skin, eyes or clothing.

Avoid spray-drift as this product may injure susceptible plants such as cotton, tomatoes and some ornamentals. Coarse sprays are less likely to drift. Do not use same sprayer for other purposes unless thoroughly cleaned. Do not store near fertilizers, seeds, insecticides or fungicides or use in a greenhouse. (To clean sprayer following use of AMIZOL, rinse all parts of sprayer with water several times.)

- Do not contaminate water used for irrigation or domestic purposes.
- Do not reuse container. Destroy in a safe place. Do not burn.
- Observe all cautions and limitations on labeling of all products used in mixtures.
- Do not use this product for purposes other than those recommended on this label.

WARRANTY

Amchem warrants that composition of this product conforms to the chemical description given in the ingredient statement and the product is suited for the purposes described when used according to directions. Because of the broad range of conditions which may be encountered with the use of this product, it is impossible to eliminate all risks even though label directions are followed. Amchem therefore makes no other express or implied warranty, and no agent of Amchem is authorized to do so. Buyer agrees in purchasing this product to assume the risks and, in the event of damages arising from a breach of the warranty, to accept refund of the purchase price of the product as full discharge of Amchem's liability.



AMCHEM PRODUCTS, INC.

First Name in Herbicide Research

AMBLER, Pa. Clinton, Iowa St. Joseph, Mo. Fremont, Calif.

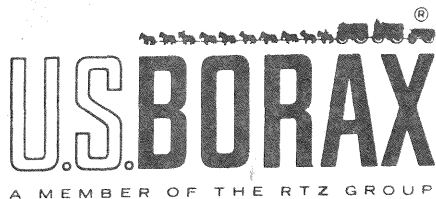


EPA Reg. No. 264-119

EPA Est. 264-PA-1

Form No. 3711-5M-10/74-MP

Printed in U.S.A.



20 MULE TEAM® KILL-POWER

UREABOR®

NONSELECTIVE WEED AND GRASS KILLER

UREABOR is a nonselective weed and grass killer. It is specifically designed for effective control of perennial grasses such as Johnson-grass, quackgrass, Bermuda grass and Dallis grass on industrial sites and noncropped land.

UREABOR has a wide range of efficiency in controlling general vegetation. Apply dry by use of a PCB Spreader or use as a water spray.

UREABOR is especially effective in eliminating established vegetation. The borate-chlorate gives quick knock-down of weeds and grasses — the bromacil assures long residual control.

UREABOR provides control of vegetation for a season or longer.

UREABOR is easy to use. Apply dry in granular form, straight from sack to soil with a handy PCB Spreader; or apply as a water spray. UREABOR is completely soluble in water.

UREABOR is economical to use. Application rates may be from 1/2 to 3 pounds per 100 square feet, depending on vegetation and residual control desired.

UREABOR is packaged in 50 pound multiwall paper bags.

Refer to directions on the label on reverse side for most efficient use of this outstanding product.

**20 MULE TEAM®
KILL-POWER**

UREABOR®

**NONSELECTIVE WEED
AND GRASS KILLER**

**On Industrial Sites or
Similar Noncropped Land**

DRY APPLICATION — Ready to use granules

SPRAY APPLICATION — Soluble in water

Single Treatment will give Knock-down of vegetation plus Long-lasting prevention of seedlings and regrowth. Especially effective on Perennial Grasses.

ACTIVE INGREDIENTS:

Sodium Metaborate Tetrahydrate ($\text{Na}_2\text{B}_4\text{O}_7 \cdot 4\text{H}_2\text{O}$)	66.5%
Boron Trioxide (B_2O_3) equivalent	22.6%
Sodium Chlorate (NaClO_3)	30.0%
Bromacil (5-bromo-3-sec-butyl-6-methyluracil)	1.5%
INERT INGREDIENTS	2.0%

U.S. Patents 2,700,604 & 3,227,541

Other Patents Pending

EPA Reg. No. 1624-90

CAUTION

KEEP OUT OF REACH OF CHILDREN

Avoid contamination of feed and foodstuffs. Do not leave container where children or animals may take internally. Harmful if swallowed. May cause irritation of eyes, nose, throat and skin. Avoid breathing spray mist. Avoid contact with skin and clothing. Do not store in direct contact with ground or concrete floors. Do not reuse container. Destroy when empty.

U.S. BORAX®

A MEMBER OF THE RTZ GROUP

LOS ANGELES • NEW YORK

DIRECTIONS FOR USE

WHAT TO USE FOR — UREABOR is designed for nonselective kill of weeds and grasses with a single treatment. Use for quick knock-down of existing vegetation as well as long lasting effects in the soil for control of regrowth or new seedlings. Use for general mixtures of weeds and grasses. UREABOR is especially potent on perennial grasses such as Johnsongrass, Bermuda grass, Dallis grass and quackgrass.

WHERE TO USE — Use UREABOR on noncropped land such as industrial sites, fence lines, storage yards, road sides and railroads.

WHEN TO USE — Use UREABOR any time during the growing season. Weeds and grasses are easier to kill with UREABOR when they are young and growing rapidly.

HOW TO USE — Uniform application over the entire area to be cleared of vegetation is essential.

Dry Application — UREABOR is ready to use. Apply with a shaker can or with a hand operated spreader such as the convenient PCB Spreader designed for this use. Power spreaders can be used for large areas. The dry granules will become effective in the soil after rainfall or artificial watering.

Spray Application — Use spraying equipment with mechanical agitation—up to 3 pounds of UREABOR may be dissolved per gallon of water (see application rates below). Add UREABOR gradually to tank during filling with agitator in operation. Dissolve completely before spraying. For quick knock-down of existing vegetation, a thorough wetting of all parts of the plant is recommended.

For small areas or for spot treatment. UREABOR may be dissolved in water and applied with a sprinkling can.

HOW MUCH TO USE — Use the following rates of application under most conditions.

Kind of Weeds

ANNUAL weeds and grasses such as:

sunflower, kochia, Russian thistle, pig-weed, crabgrass, downy brome

Dry

1 lb./100 sq. ft.

Applied

Spray

1 lb./gal./100 sq. ft.

PERENNIAL weeds and grasses such as:

Johnsongrass, Bermuda grass, Dallis grass, quackgrass, Canada thistle, field bindweed, bluegrass

3 lbs./100 sq. ft.

3 lbs./gal./100 sq. ft.

MIXED annual & perennial weeds and grasses

3 lbs./100 sq. ft.

3 lbs./gal./100 sq. ft.

As low as 1/2 lb./100 sq. ft. can be used on annual weeds when young and growing rapidly.

As low as 1 lb./100 sq. ft. can be used on seedlings of perennials when young and growing rapidly.

Approximately 2 1/2 cups of UREABOR equals 1 pound.

IMPORTANT

This material is not selective in action and may be toxic to all types of vegetation and may render the entire treated area totally or partially unproductive for one or more years. Care should be taken to confine the use or application to the particular area intended to be treated and to avoid its contact with lawns, trees, shrubs, crops and other desirable plants which are not intended to be destroyed or injured. This includes precautions in treating areas which may be underlaid by roots of adjacent valuable growths. Careless application of this material, or washing by water run-off, to areas where desirable plants are growing or which will be used for later planting may result in injury to desirable plants. Do not drain or flush equipment on or near such areas. Do not contaminate domestic or irrigation water or waters used by fish and wildlife. Wash clothing and equipment after application. Keep animals off treated areas until rainfall has leached all the herbicide into the soil. Mechanical equipment should be thoroughly cleaned after use.

NOTICE

Because of the many varying conditions affecting use and application, such as location, seasonal weather, soil composition and type of vegetation, manufacturer warns buyer that these and other conditions may impair or vary the results or effects of the use of this product. In any event, complete elimination of weeds is not guaranteed. It is advisable to consult your State Extension Service or Agricultural Experimental Station weed specialists on specific problems. Neither manufacturer nor seller shall be liable in respect to any injury or damage suffered by reason of the use of this product for a purpose not indicated by the label or when used contrary to the directions or instructions hereon nor with respect to breach of any warranty not expressly specified herein. Buyer accepts this material subject to these terms, and assumes all risk of usage and handling except when used or handled in accordance with this label. Neither manufacturer nor seller makes, and their employees and agents are not permitted to make, any representations or warranties, express or implied by law, not specifically set forth herein.

UNITED STATES BORAX & CHEMICAL CORPORATION

3075 WILSHIRE BLVD., LOS ANGELES, CALIFORNIA 90010



HYVAR[®] X

BROMACIL WEED KILLER

WETTABLE POWDER

ACTIVE INGREDIENT:

Bromacil (5-bromo-3-sec-butyl-6-methyluracil)..... 80%

INERT INGREDIENTS..... 20%

U.S. Pats. 3,235,357
& 3,352,862

Keep out of reach of children. EPA Reg. No. 352-287-AA

CAUTION! MAY IRRITATE EYES, NOSE, THROAT, AND SKIN.

Avoid breathing dust or spray mist. Avoid contact with skin, eyes, and clothing.

IMPORTANT—Injury to or loss of desirable trees or other plants may result from failure to observe the following: Do not apply (except as recommended for crop use), or drain or flush equipment on or near desirable trees or other plants, or on areas where their roots may extend, or in locations where the chemical may be washed or moved into contact with their roots. Do not use on lawns, walks, driveways, tennis courts, or similar areas. Prevent drift of dry powder or spray to desirable plants. Do not contaminate domestic waters. Keep from contact with fertilizers, insecticides, fungicides, and seeds. Thoroughly clean all traces of "Hyvar" X from application equipment immediately after use. Flush tank, pump, hoses, and boom with several changes of water after removing nozzle tips and screens (clean these parts separately).

Do not re-use bag. Bury when empty.

NET 4 LBS.

E. I. du Pont de Nemours & Co. (Inc.)

Biochemicals Department, Wilmington, Delaware

GENERAL INFORMATION

Du Pont "Hyvar" X Bromacil Weed Killer is a wettable powder to be mixed in water and applied as a spray for control of weeds and brush. It is non-corrosive to equipment, non-flammable and non-volatile.

"Hyvar" X is an effective general herbicide for the control of many annual weeds at low rates and perennial weeds and brush at higher rates and is particularly useful for control of perennial grasses. It may be used on non-cropland for non-selective weed and brush control and for selective weed control in certain crops.

Effects are slow to appear and may not become apparent until the chemical has been carried into the root zone of the weeds by moisture. The degree of control and duration of effect will vary with the amount of herbicide applied, soil type, rainfall, and other conditions.

DIRECTIONS

Apply "Hyvar" X as a spray just before or during the period of active growth of plants to be controlled. If dense growth is present, results will be improved if vegetation is removed before treatment. Do not apply when ground is frozen.

Before spraying, calibrate equipment to determine quantity of water necessary to uniformly cover measured area to be treated. Weigh the proper amount of "Hyvar" X and mix into necessary volume of water.

For crop use, apply with a fixed-boom power sprayer properly calibrated to a constant speed and rate of delivery. For calibration instructions, see Du Pont Bulletin, "Instructions for Applying Du Pont Weed Killers for Selective Weed Control in Crops". Use sufficient water (min. 40 gals. per acre) to provide thorough and uniform coverage of the ground. Spray booms must be shut off while starting, turning, slowing or stopping, or injury to the crop or successive crops may result.

For non-crop use, application also may be made with a hand gun sprayer using at least 200 gals. spray per acre to insure uniform coverage. For small areas, a hand sprayer or sprinkling can may be used.

Nozzle screens should be 50 mesh or larger. Continuous agitation in the spray tank is required to keep the material in suspension. Agitate by mechanical or hydraulic means in the spray tank. If by-pass or return line is used, it should terminate at bottom of tank to minimize foaming. Do not use air agitation.

NOTICE TO BUYER

Seller warrants that this product conforms to the chemical description on the label thereof and is reasonably fit for purposes stated on such label only when used in accordance with directions under normal use conditions. This warranty does not extend to use of this product contrary to label use directions, or under abnormal use conditions, or under conditions not reasonably foreseeable to seller; buyer assumes all risk of any such use. Seller makes no other warranties, express or implied.

NON-CROP USE

WEED CONTROL

To control most weeds for an extended period of time on non-cropland areas such as RAILROAD, HIGHWAY and PIPELINE RIGHT-OF-WAYS, PETROLEUM TANK FARMS, LUMBERYARDS, STORAGE AREAS and INDUSTRIAL PLANT SITES:

Apply 3 to 6 lbs. per acre to control ANNUAL WEEDS and GRASSES such as foxtail, ryegrass, wild oats, crabgrass, cheatgrass, bromegrass, ragweed, lambsquarters, puncturevine and turkey mullein. When applied just prior to or after emergence of annuals, rates as low as 2 lbs. per acre control many annual weeds and grasses in low rainfall areas and give short term control in higher rainfall areas.

Apply 7 to 12 lbs. per acre to control PERENNIAL WEEDS and GRASSES such as smooth brome, Bahia grass, bluegrass, redtop, purpletop, quackgrass, broomsedge, aster, dandelion, dig, fennel, goldenrod, plantain and wild carrot. In areas with low or seasonal rainfall, rates as low as 5 lbs. per acre control many perennial weeds and grasses.

Apply 15 to 30 lbs. per acre to control JOHNSONGRASS; use at the same rate for OTHER HARD TO-KILL PERENNIAL WEEDS and GRASSES such as Bermudagrass, dallisgrass, nutgrass, vaseygrass, saltgrass, bouncingbet, dogbane, bracken fern and horsetail. Where limited rainfall (usually less than 4 inches) occurs during the active growth period, such as some areas of the West, "Hyvar" X usually will not provide satisfactory control of hard-to-kill, deep-rooted perennial weeds such as Johnsongrass.

Note—Use the higher levels of the dosage ranges on adsorptive soils (those high in organic matter or carbon).

Retreatment—Apply 2 to 6 lbs. per acre when annual weeds and grasses reappear on sites where weed growth has been controlled.

For Small Areas— $\frac{1}{4}$ cupful of "Hyvar" X per 250 sq. ft. is approximately 15 lbs. per acre.

BRUSH CONTROL

To control undesirable woody plants on non-cropland areas such as RAILROAD RIGHT-OF-WAYS, STORAGE AREAS, INDUSTRIAL PLANT SITES, and DRAINAGE DITCHES:

Apply in spring or summer as a broadcast or basal (spot) treatment; for use on drainage ditches, apply as a basal (spot) treatment only. **Note:** For effective brush control and prevention of damage to desirable vegetation: do not apply to brush standing in water; do not use water from treated ditches for irrigation; do not use in irrigation ditches nor on right-of-ways or other sites where marketable timber or other desirable trees or shrubs are immediately adjacent to the treated area.

Broadcast Treatment—Apply 7 to 12 lbs. per acre to control oak, willow, sweet gum, and pine; apply 15 to 30 lbs. per acre to control brush such as American elm, winged elm, hackberry, sumac, and cottonwood. Use the higher levels of the dosage ranges on adsorptive soils (those high in organic matter or carbon).

Basal (Spot) Treatment—Mix $2\frac{1}{2}$ lbs. in 5 gals. of water and apply at the rate of 1 to 2 fl. oz. per stem 2" to 4" in basal diameter; wet base of stem to run-off. Treatment controls woody plants such as cottonwood, hackberry, maple, oak, poplar, red bud, sweet gum, wild cherry, willow, and winged elm.

SELECTIVE USE IN CROPS

"Hyvar" X should be used only in accordance with recommendations on this label, or in separate Du Pont bulletins available through local dealers.

All dosages of "Hyvar" X are expressed as broadcast rates. For band treatment, use proportionately less; for example, use $\frac{1}{2}$ of the broadcast rate when band treating $\frac{1}{2}$ of the area.

Moisture is necessary to activate the chemical; best results are obtained if moisture is supplied by rainfall or irrigation within two weeks after application.

CITRUS (Oranges, Grapefruit, Lemons)

Apply as a band or broadcast treatment beneath and/or between trees. Avoid contact of foliage and fruit with spray or mist. Temporary yellowing of citrus leaves may occur following treatment.

Because injury to citrus trees may result: do not use on soils low in organic matter (less than 1%) nor on poorly drained soils; do not apply more than 8 lbs. per acre per year; do not treat trees planted in irrigation furrows; do not treat diseased trees such as those with foot rot. Do not use in citrus orchards interplanted with other trees or desirable plants, nor in home citrus plantings or in areas where roots of other valuable plants or trees may extend as plant injury may result. Treated areas may be planted to citrus trees one year after last application; do not replant to other crops within 2 years after last application as plant injury may result.

Trees Established for Four Years or More

Annual Weeds—Including crabgrass, crowfoot, Coloradograss, natalgrass (red top), barnyardgrass (watergrass), sandspur, purslane, Florida pusley, sprangletop, puncturevine, mustard, lambsquarters, henbit, annual sedge and turkey mullein, apply 2 to 4 lbs. per acre. Apply anytime of the year, preferably shortly before or after weed growth begins when adequate moisture is available.

Perennial Weeds—Best results are obtained if application is made shortly before or shortly after weed growth begins; if dense growth is present, remove tops and spray the ground. Effects on perennial weeds are slow to appear, usually progressing over a period of several months.

Make a single application per year during the period from winter to early summer; use at the following rates:

Soil Type	Lbs. "Hyvar" X Per Acre
Sand, loamy sand	4 to 5
Sandy loam	5 to 6
Silt loam, clay loam	6 to 8

Alternatively, make two applications of 3 to 4 lbs. "Hyvar" X per acre per year. In Florida, Texas, and Louisiana, apply in spring and summer; in California and Arizona, apply in fall and spring.

Note—Partial control usually occurs with a single treatment; repeat applications are required to control perennials. "Hyvar" X controls the following:

Bermudagrass All areas U.S.

Torpedograss, paragrass,

pangolagrass,

Bahia grass Florida

Johnsongrass Texas

Nutsedge Texas, California

Control of perennials may be improved by cultivation prior to treatment; otherwise, avoid working the soil as long as weed control continues or else effectiveness of the treatment may be reduced.

Torpedograss Control—Barrier Strip Treatment

For control of torpedograss adjacent to citrus groves to prevent spread of the weed into groves, apply 30 lbs. per acre. Treat a border strip 10 to 20 ft. wide adjacent to the citrus grove, but not closer than 10 ft. to the drip-line of citrus trees. Examine treated area every four months after application and spot-treat invading or surviving torpedograss at 30 lbs. per acre (11 oz. per 1000 sq. ft.). For best results apply in late winter or early spring after the torpedograss has broken dormancy and is actively growing. For later season application where growth is rank, mow or disc the area prior to treatment.

PINEAPPLE

Do not replant treated areas to any crop other than pineapple within 2 years after last application as injury to subsequent crops may result.

Hawaii—For control of seedling weeds such as crabgrass, wiregrass, foxtail, chloris, Hialoa, Flora's paintbrush, balsam apple and Amaranthus, apply 2 to 6 lbs. per acre broadcast immediately after planting and before the planting material begins to grow. Use the lower rates in low rainfall areas (5 to 10 inches annually) and on clean-culture fields; use the higher rates in high rainfall areas (above 10 inches annually) and for trash-mulch fields. An additional application of 2 lbs. per acre may be made prior to differentiation, if needed, as a directed interline spray. Do not spray over top of plants.

Puerto Rico—For control of seedling weeds such as crabgrass, goosegrass, jungle rice, pigweed, and purslane, apply 2 to 4 lbs. per acre broadcast immediately after planting and before planting material begins to grow.

SPECIMEN LABEL
(73% OF ACTUAL SIZE)

APPENDIX C

GLOSSARY

GLOSSARY

- Acid equivalent - That proportion of a compound or formulation that theoretically could be converted back to the corresponding acid.
- Active ingredient - A substance contained in a preparation which will, by itself, act in the same manner and for the same purposes as the preparation as a whole.
- Acute oral LD₅₀ - An LD₅₀ obtained when the toxicant is taken orally by the animal being tested.
- Acute oral toxicity - The acute toxicity of a substance when taken orally.
- Acute toxicity - A severe attack of poisoning due to over-exposure to a chemical.
- Adsorbition - Condensation or adhesion of gases and liquids on the surfaces of solids.
- Annual plant - A plant that completes its life cycle from seed in one year.
- Ballast - Gravel or broken stone laid in the trackbed of a railroad to provide a firm surface for the track, to hold the track in line, and to facilitate drainage.
- Ballasted area - The area covered with ballast.
- Biological control - Use of any biological agents such as insects, bacteria, fungi, or parasitic plants for control of target plants.
- Broadleaf plant - Any plant with a flat leaf. In herbicide programs, this refers to non-grassy types of herbaceous plants.
- Brush - Woody plants such as young alder, salmonberry, etc.
- Carcinogenic - Producing or tending to produce cancer.
- Chlorinated hydrocarbons - A group of pesticides, usually used as insecticides, one of them being DDT.
- Chronic toxicity - A condition in which a chemical accumulates in the body, or its effects are additive, bringing on illness or sometimes death.
- Dormant spray - A spray applied when plants are in a dormant condition.
- Drift - The movement of a portion of the airborne particles of a dust or spray away from an intended point of application.

Emulsifiable concentrate - Produced by dissolving the toxicant and an emulsifier in an organic solvent.

Emulsifier - A surface-active substance which stabilizes (reduces the tendency to separate) a suspension of droplets of one liquid in another liquid which otherwise would not mix with the first one.

Emulsion - A dispersion of fine particles of oily material in water (OW type).

E.P.A. - Environmental Protection Agency.

Granular formulation - Dissolved chemical mixed with a carrier such as clay. It is applied in dry form as small particles or pellets.

Herbaceous - A plant that remains soft and does not develop woody tissue.

Herbicide - A chemical used for killing plants or interrupting their normal growth.

Herbicide-mechanical treatment - A vegetation control treatment which combines both mechanical methods and herbicide application.

Invert emulsion - One in which the water is dispersed in oil rather than oil in water. Oil forms continuous phase with the water dispersed therein. Usually a thick, mayonnaise-like mixture results.

Labor-hour - One hour of work by one person.

LC₅₀ - Symbol denoting median lethal concentration, rather than dose as in the case of LD₅₀.

LD₅₀ - The amount of toxicant necessary to effect a 50 percent kill of the animal being tested. It is expressed in weight of the chemical per unit of body weight.

Leaching - Downward movement of a material in solution through soil.

mg/kg - Milligrams of toxicant per kilograms of animal body weight.

mg/kg/day - Milligrams of toxicant per kilograms of animal body weight per day.

"Mothballed" roads - Roads which are not presently being used but are being maintained for future use.

Nonselective herbicide - A chemical that is toxic to plants generally without regard to species.

Non-target plants - Those plants in the treatment area which are not to be controlled.

Perennial - A plant that lives for more than two years.

Persistence - Length of time that a herbicide application remains effective.

Pesticide - Any substance or mixture of substances intended for controlling organisms considered to be pests.

Phenoxy herbicides - A group of herbicides including 2,4-D; 2,4-DB; and 2,4,5-T.

ppb - Parts per billion by weight. 1,000 ppb = 1 mg/kg.

ppm - Parts per million by weight. 1 ppm = 1 mg/kg.

Selective herbicide - One which has more toxic action on some species of plants than on others.

Spot treatment - Application of sprays to localized or restricted areas as differentiated from overall, broadcast, or complete coverage.

Substation - A station which is subsidiary to a central station at which high-tension electricity from the central station is transformed to electricity lower in potential and converted if desired to continuous current or to alternating current of a different frequency.

Systemic herbicide - See translocation.

Target plants - Plants in a treatment area which are to be killed.

Teratogenic - Causing or tending to cause abnormal growth of fetuses.

Toxicity - The quality, state, or relative degree of being poisonous.

Translocation - Distribution of an herbicide from the point of absorption to other parts of the plant. Herbicides moved in this manner are called systemic herbicides.

Wettable powder - A powder that will form a suspension readily in water.

Woody plants - Plants that develop woody tissue.